Missoula County
Community Wildfire Protection Plan

August 2005

Initiated by the *Missoula County Office of Emergency Services*

Moved Forward by Concerned Citizens

THE WILDLAND/URBAN INTERFACE *of Pattee Canyon (top) captured by satellite imagery; and the 2003 Crazy Horse Fire near Seeley Lake.*
Photos courtesy NRI &/S. Hahn – NPS/USFS

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**For copies of this plan,
visit the Missoula County website**
http://www.co.missoula.mt.us/des/

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INTRODUCTION

Wildland fire in western Montana is well documented. It's been occurring for eons, and has shaped the vistas we treasure. It brings nutrients to the soil and diversity to the vegetation and wildlife (even the aquatic kind) and, in doing so, benefits the humans who later live in its path. More to the point, we cannot stop wildfire from occurring. Our attempts to do so—our suppression of all wildland ignitions for most of the 20th century—have actually made a complicated "fire management" situation more difficult.

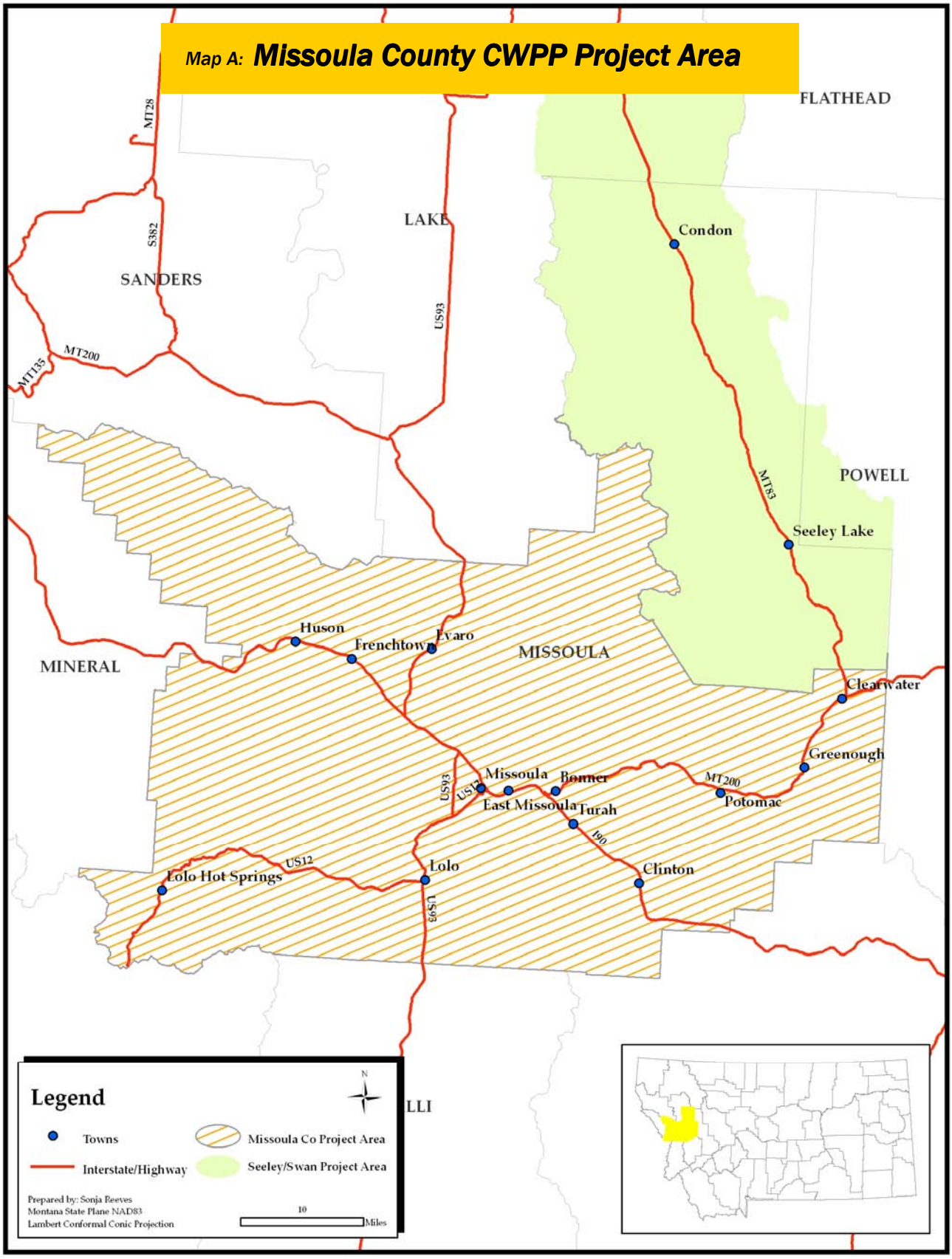
Missoula County leaders in emergency response, land stewardship, and community preparedness want us to live safer with wildland fire. They created this Community Wildfire Protection Plan (CWPP) to do just that. Mandated by the Healthy Forests Restoration Act of 2003 (and a host of national fire-strategy documents, including the National Fire Plan), this county-level document emphasizes *collaboration*, and *reduction of hazardous fuels and structure ignitability*, per national direction.* It gives Missoula County residents "notice" of their wildfire hazards and risks, and offers suggestions for treatment on public and private lands. Essentially, it strives to be the citizen's voice in the ongoing process of protecting communities from wildfire. –Without this voice (and subsequent actions to prepare for wildfire at the neighborhood level), we remain potential victims of wildfire, and that's not necessary for humans or nature.

Note: A diverse group of interested parties guided development of this plan, which is supported by Missoula County officials and members of the Missoula County Fire Protection Association (MCFPA), a multi-agency partnership that seeks changes in wildland fire risks through the most cost-effective, time-efficient, and community-supported means available.

This plan is an appendix to the Missoula County Pre-Disaster Mitigation Plan and is a companion document to the Seeley-Swan Fire Plan. Copies can be obtained through the Missoula County website (see Emergency Services homepage).

A western Montana crown fire in 2000. Photo: USFS

* References: The National Fire Plan (2000); the Implementation Plan of the 10-Year Comprehensive Strategy for A Collaborative Approach For Reducing Wildland Fire Risks to Communities and the Environment (2002); the Healthy Forests Restoration Act (2003), and Preparing A Community Wildfire Protection Plan (2004). Also see Suggested Readings in Appendix Section.


Map A: Missoula County CWPP Project Area
FLATHEAD
LAKE
SANDERS
POWELL
MINERAL
MISSOULA
LLI
MT28
S382
US93
MT200
MT135
MT83
US12
190
Condon
Seeley Lake
Huson
Frenchtown
Evaro
Clearwater
Greenough
Missoula
Bonner
East Missoula
Turah
Potomac
Clinton
Lolo
Lolo Hot Springs
Legend
Towns
Interstate/Highway
Missoula Co Project Area
Seeley/Swan Project Area
N
Prepared by: Sonja Reeves
Montana State Plane NAD83
Lambert Conformal Conic Projection
10
Miles

WHAT'S AT RISK?

The "values at risk" from wildfire in Missoula County (Montana) are countless. The jurisdiction covers nearly 2600 square miles of mountainous terrain–containing five large valleys; two major rivers; an Interstate highway and railway system; numerous historic, recreation, and cultural, sites; a state university; acres of private and public forests; and a populace estimated at 98,610, by the US Census Bureau in 2003.

Note: This section addresses the entire county. However, the following Assessment/Recommendations sections ONLY pertain to the **Missoula County Project Area** (see map on previous page), which includes all of Missoula County, except the northern portion. The Seeley/Swan Fire Plan covers that area.

MISSOULA COUNTY COMMUNITIES

Western Montana's largest city—Missoula (estimated population 63,000)–is the County Seat. In 2001, the Federal Register listed Missoula and many other communities in the area as being "at risk from wildfire." This Community Wildfire Protection Plan (CWPP) supplements those findings. It's built using scientifically based data and assessment methodology, as well as input from fire district personnel and interested publics. It recognizes that much of Missoula County is a wildland/urban interface *wildfire-risk* area, and that the folks who live, work, or recreate in its environs—whether grass-, shrub- or forest- lands—must be prepared for wildfire. This plan also offers ways to minimize risk and, thereby, reduce the undesirable effects of wildfire on lives, property, water supplies, economies, and aesthetics.

FIRE RESPONSE JURISDICTIONS

Most* of Missoula County (meaning its communities and their growing suburban areas) is part of a legally recognized, rural fire district, fire

Fire Response Jurisdictions &
Their Communities in Missoula County

(Co. Response Area)

Arlee Rural Fire District (152 sq.mi.)
- *South of Arlee*

Clinton Rural Fire District (8 sq. mi.)
- *Clinton*
- *Lower Rock Creek +*

East Missoula Rural Fire District (.98 sq. mi.)
- *East Missoula*

Florence Rural Fire District (7 sq. mi.)
- *North of Florence*

Frenchtown Rural Fire District (105 sq. mi.)
- *Evaro*
- *Frenchtown*
- *Huson/Ninemile*
- *Petty Creek*
- *The Wye*

Greenough/Potomac Fire Service Area (201 sq. mi.)
- *Greenough*
- *Potomac*

Missoula Rural Fire District (84.5 sq. mi.)
- *Blackfoot/Turah*
- *Grant Creek/Rattlesnake*
- *Pattee Canyon*
- *Lolo/Miller Creek*
- *Target Range/Big Flat*

Missoula City Fire Department (25 sq. mi.)
- *Missoula*

Seeley Lake Rural Fire District* (60 sq. mi.)
- *Seeley Lake*

Swan Valley Fire Service Area* (139 sq. mi.)
- *Condon*

+ Wants to Join Clinton Fire District. * **Covered by Seeley/Swan Fire Plan**

* To date, very few known structures are located outside a fire response jurisdiction. For more explanation, see Fire Response Capabilities section.

service area, or a municipal fire department. And it's from this jurisdictional context that we identify high-priority treatment areas and suggest ways to approach projects (and funding opportunities) that can reduce vegetation buildups and the ignitability of structures within those at-risk communities.

**Missoula County*
Land Ownership Statistics**

USDA Forest Service:	*696,085 acres*
Plum Creek Timberlands:	*436,969 acres*
Private Owners:	*311,584 acres*
State of Montana:	*100,866 acres*
Flathead Tribal & BIA Trust:	*94,554 acres*
Bureau of Land Mgm.:	*20,682 acres*

**includes the Seeley/Swan areas*

Other Response Jurisdictions

In addition to firefighters fielded by each community, *seasonal wildland* firefighters are deployed by the Forest Service (USFS), the Montana Department of Natural Resources and Conservation (DNRC), and the Confederated Salish and Kootenai Tribes (CSKT). These crews can help reduce local fire hazards and steer flames away from private homes and communities, but their job is to fight wildland fire. And unlike, the community fire response crews, they are not trained or equipped to fight a structure fire (see definitions of structural and wildland firefighting in Appendix glossary).

The largest *private* land*owner* in Missoula County is Plum Creek Timberlands, Inc. Their forestry crews are helpful in fire watch, prevention and fighting. However, the company ultimately relies on the State of Montana, which is tasked with providing wildland fire protection to private lands not inside a fire-response jurisdiction. A formal cooperative agreement for such coverage exists between the State of Montana and Missoula County.

Note: By interagency agreement, the DNRC is responsible for wildfire protection on Bureau of Land Management (BLM) lands in Missoula County. For more specifics, see Fire Response Capabilities section.

KEY COMMUNITY VALUES

Critical Infrastructure

Communication and power transmission lines; transportation corridors; hazardous-material facilities and other critical structures (such as hospitals, schools and public shelters)—all are priorities for a Community Wildfire Protection Plan (CWPP). The Missoula County Pre-Disaster Mitigation Plan (PDM) more fully describes the County's critical infrastructure. This CWPP recognizes that proactive planning and action can limit wildfire's indirect effects (i.e., heavy smoke) as well as its direct (flames and embers).

Power lines in jeopardy during the Black Mountain Fire of 2003.
Photo: USFS

Water Supplies

Fire and Water

In addition to potable water, local companies supply water for sewer treatment and fire protection. The County's abundance of rivers, lakes and streams is also crucial in wildland fire protection operations.

- Missoula County Pre-Disaster Mitigation Plan

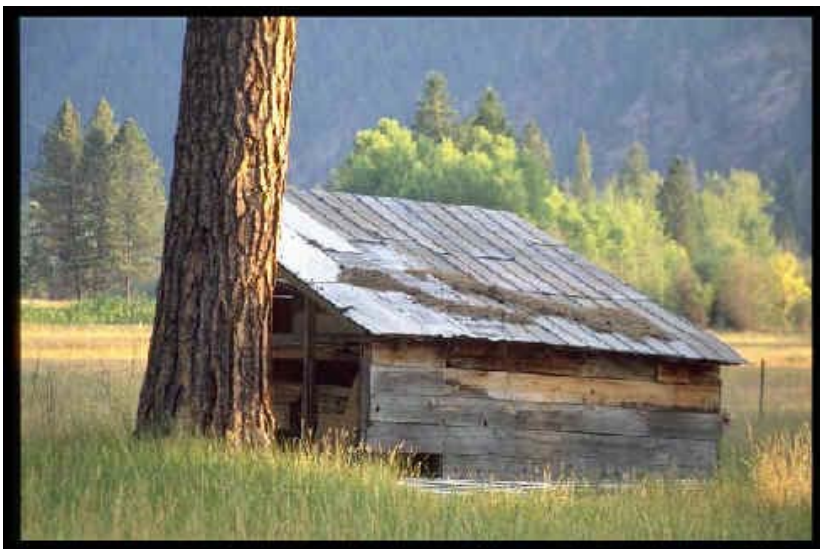
However natural to the landscape, wildfire in watersheds usually equates to post-fire erosion and downstream drinking-water problems. Even in areas where tap water comes from below ground, it's best to minimize severe wildfire in surrounding watersheds.

In most of Missoula County, the drinking water is pumped to its citizens via personal wells or the Mountain Water Company (MWC) system, which taps a fast-moving aquifer that is sometimes less than 10 feet below the surface. According to MWC literature, this water requires only "a low-level disinfection with chlorine" before being delivered to more than 56,000 customers. MWC also designates Rattlesnake Creek as a surface-water source: Under state mandate, this water can only be tapped under special circumstances. In the northern portion of the County, drinking water comes from surface sources, making watershed protection a particular priority.

Cultural/Tribal/Historical Sites

The footprints of Montana's native peoples and immigrants can be traced across Missoula County. In the northwestern portion (the southern end of the Flathead Indian Reservation), the CSKT Tribal Preservation Department continues to identify and record place names and locations of sacred sites, camps, and trails. Elsewhere, Missoula County has more than 75 sites listed on the US Register of Historic Places. These sites include the Lower Rattlesnake and Fort Missoula historic districts in Missoula; the Catholic Church in Frenchtown; the Stark Schoolhouse in the Ninemile Valley; and the Camp Paxson Boy Scout Camp in Seeley Lake.

Note: Local communities can best plan the means to protect these historic places from severe wildfire.



Signs of earlier times in western Montana. Photo: USFS

Open Space/Recreation Sites

Missoula County residents place a high priority on scenic vistas and their ability to recreate outdoors. Wildfire limits those opportunities. Accordingly, it's important from a community values and public safety perspective to mitigate wildfire risks within/around designated open-space areas near communities, as well as recreation sites on public and private lands.

NOTE: Other values can be added/specified during micro- level planning or the CWPP revision process.

ASSESSING THE SEVERE WILDFIRE RISK

Assessing the factors that can contribute to a fast moving, home-destroying (high-intensity or severe) wildfire is a crucial first step when developing a Community Wildfire Protection Plan. National guidelines suggest compiling a baseline of data that can include critical infrastructure, population densities, fire history, and vegetative fuel types–to name a few possible elements. Guidelines also recommend mapping this data, if possible.

Plan Assessment Criteria

Fire Factors
- Vegetative Fuels
- Insect & Disease Mortality
- Slope

Human Factors
- Population Density
- Critical Egress

The group building Missoula County's CWPP chose five assessment criteria to apply to its Project Area: *Three* are related to wildfire behavior (*Vegetative Fuels*, *Insect and Disease Mortality,* and *Slope*). The other *two* (*Population Density,* and *Critical Egress*) are human factors. Each was assigned a weight of importance and combined with the others to determine *High*, *Moderate* and *Low Priority* for *Fuels Reduction* project areas. More details on this process are provided in the Assessment Results section. It also offers map references and explanation of other factors, such as emergency response capabilities and fire chief knowledge about wildfire risks.

Local Fire History

Perhaps Montana's most famous wildfire burned into western Missoula County in 1910 (or at least as the county was then configured). Seventy-eight firefighters and an unknown number of citizens; five towns; and three million acres in Montana and Idaho burned during The Great Fires of 1910. Some say this catastrophic event influenced America's wildland fire policies for most of the 20th century.

More recently, wildfire has destroyed homes near the city of Missoula, at least twice. In 1977, six homes were lost on the southeastern edge of the city during the Pattee

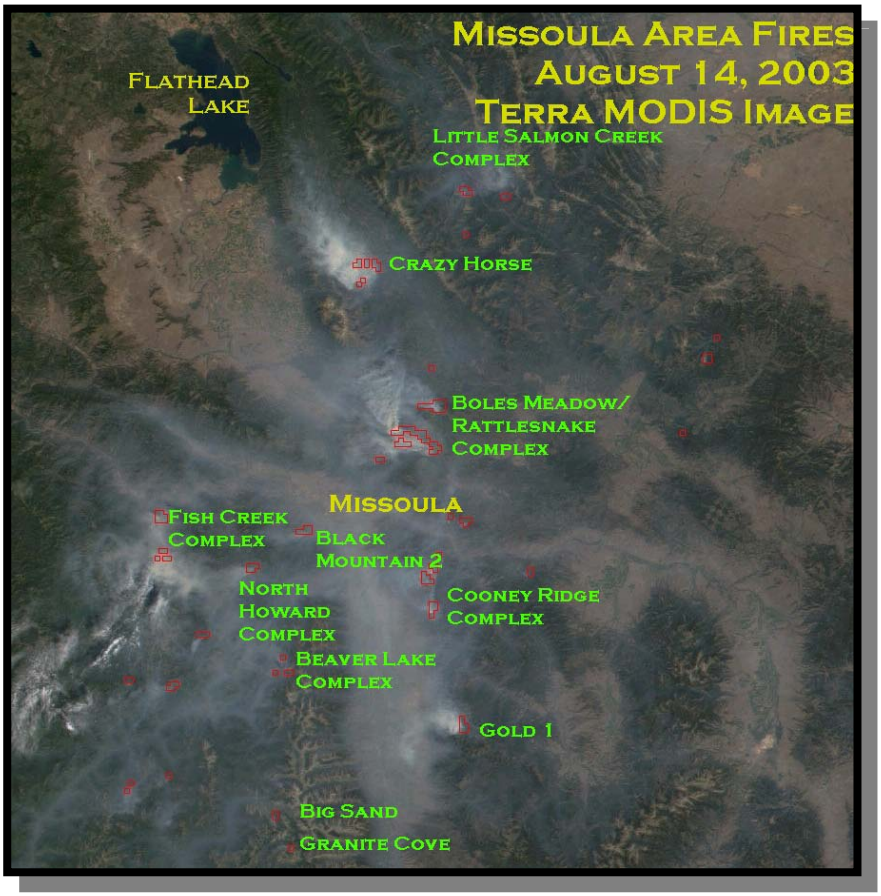


Image courtesy Fire Sciences Lab: USFS

Canyon Fire; then in 2003, three dwellings burned during the Black Mountain Fire, which over the course of a week threatened some 600 homes at the city's southwestern edge. In between these landmark fires are the 1988 Canyon Creek Fire, *which burned 180,000 acres in 24 hours just to the north of us*; the 2000 Bitterroot Fires, *which burned 360,000 acres and 70 homes just to the south*—and a long list of others that have claimed their share of taxpayer dollars and firefighter resources, but did not result in loss of lives or homes. So they are forgotten (by most people) in the never-ending parade of wildfires in western Montana.

Wildfire Causes

Lightning is a historic fire starter in Missoula County. On average, we experience 3,000-4,000 strikes a year, which equates to one strike for every 1.3 square miles. Most ignitions occur in remote areas, but when the flames move toward unprepared urban fringes, they do damage. Of the 609 fires reported during the 2000 season in the Southwest Montana Zone (which includes Missoula County), two-thirds (439) were lightning caused.

People also cause wildfires. They burn yard waste (or a patch of land) and let the fire escape its boundaries, or ignition occurs by children playing with fireworks, smokers careless with cigarette butts, or heated catalytic converters in dry grass. Only a fraction of starts are arson.

Note: While humans <u>can</u> prevent careless human-caused fires, we <u>cannot</u> prevent lightning starts. Our best option is to prepare for fire's arrival and so minimize its more devastating effects. (See Reducing Ignitability section.)

Burn of the Century

"**Had they been able to soar** upward with the smoke over the St. Joe Mountains, and a bit beyond, they would have witnessed a vast tsunami of flame, set into motion by the tremors of a fast-paced cold front, sweeping across the Rockies like a broken-edged scythe. Their separate behaviors followed everywhere more or less the same scenario. The winds rose, the fires exploded, the winds shifted, the fires veered with them, the winds dropped, and the surge subsided. The longer the fetch of wind and fuel, the larger the fire. The biggest burns moved from the most westerly origins, rushing eastward along deep valleys until, with a roar, they broke over the crest of the Bitterroots.

From the <u>Year of the Fires: The Great Fires of 1910</u>

Fire Behavior Factors

The type and condition of the *fuel* (vegetation and structures), the *topography* of the land, the local *weather*—all this data is used to predict wildfire behavior. Only the fuel factor can be manipulated, however. Topography and weather can be understood, but not influenced.

Climate *for* Western Montana is described as "continental" with "cold winters and warm, dry summers" due to our location east of the Cascade Mountain Range while still being interior to the Columbia River Basin. Missoula County has an average 113 growing season days annually.

Temperatures, at their extremes, vary from well below 0° Fahrenheit (F) in the winter and above 100° F in the summer. Daily averages for maximum temperatures are 29° F (in January) and 84° F (in July).

Precipitation in the high elevations averages 24 inches annually (but as much as 60 inches in some places). In the low elevation basins, it averages 12 inches. Most precipitation occurs during the winter. May and June are the rainiest months. Thunderstorms and lightning are common throughout the summer. We average about 25 storms a year.

Relative humidity—the amount of moisture in the air–during an average summer can range from 30%-40% in the daytime (late afternoon) and 75%-83% in the evening (very early morning), based on a 30-year average. In 1994 and 2000 (both severe wildfire seasons locally), the daytime readings for relative humidity in August averaged 19%. Evening readings averaged 63%. The average winter daytime and evening readings (for December) are 80% and 86%, respectively.

Wind speeds during the summer months (at the Missoula Airport) average seven miles per hour (mph) from the northwest. During a typical July, according to the National Weather Service (NWS), winds are often calm during the morning hours (9 am – 12 pm), but due to daytime heating pick up (to a sustained six to seven mph) until about 9 pm when they generally calm again. During the Black Mountain Fire of 2003, sustained winds were clocked at 20-25 mph with gusts of 40-45 mph.

Wind events increase the amount of oxygen available to a wildfire, thereby increasing its intensity. Wind events are often associated with cold fronts. In this region during the winter months, high pressure tends to dominate. Calm winds and cold air tend to trap smoke and pollution in the valley bottoms, limiting winter use of wildland fire for land-stewardship purposes, or the burning of wood for home heating.

Fire Weather Events of Note

- At the writing of this fire plan in 2005, Missoula County is in its sixth year of drought. NOAA scientists estimate that western Montana experiences drought in 20-40 year cycles, which indicates that our potential for catastrophic wildfire could continue to escalate, due to the effects of drought on standing and downed vegetation.
- Missoula County may well become drier yet. Scientists are predicting that by 2040, at the current rate of global warming, Glacier National Park (several hours north of us) will have no glaciers. This means less precipitation to the overall landscape as well as runoff to rivers and streams.
- The Missoula Station of the National Weather Service (NWS) reports that there were more 100° Fahrenheit (F) days in Missoula County between 2000 and 2004 than all of the previous 30 years. This heat further stresses vegetation around communities.
- During the severe wildfire seasons of 2000 and 2003, the NWS indicates "an unusual number of days with relative humidity of less than 15%." Fire managers know that readings like those mean intense wildfire conditions, because it contributes to low fuel moisture. In 2000, live standing timber had fuel moistures comparable to kiln-dried lumber.
- The NWS also indicates that precipitation levels in the winter/spring do not influence severe wildfire seasons. The only characteristic these catastrophic years have in common is hot, dry summers, such as that experienced in 1910, 1988, 1994, 2000 and 2003 (or "every bad fire season since 1900").
- The potential for "big fire runs" is highest in August and September due to the passage of cold fronts.
- High-intensity or severe wildfires, also called firestorms, create their own, highly erratic winds.
- Winds contribute to the aridity of a landscape.

DEFINING THE FIRE INTERFACE

In the fire-management community, the term *Wildland/Urban Interface* (WUI) refers to the area *where human development meets natural vegetation and the chance for catastrophic wildfire increases*. This could literally mean most of Missoula County. So for our Community Wildfire Protection Plan (CWPP), we need a more precise (community-supported) definition.

National guidelines recommend for landscapes such as ours (meaning with our makeup of fuels and topography) that we define the WUI as being 1.5 miles from ***structures***. However, Missoula County doesn't have a database of *exact* structure locations–and is likely to never have such, given the expense of data acquisition and the expanding nature of the WUI. Instead, this fire plan relies on *population density* data, as provided by the US Census Bureau. Project leaders understand that this data is useful for predicting development patterns within the County and, as such, it could be referenced to influence development in future.

Knowing that this fire plan is a living document, regularly and easily updated, project leaders have elected to accept the national default, and thus ***define the County WUI as being a 1.5 mile zone around areas of population density*** (see Map B in Appendix). They encourage local fire officials (and their community partners) to analyze their jurisdictions/neighborhoods in future and modify this definition with rationale, i.e. an expanding development area or a specific risk factor, such as homes in an existing lightning alley.

Typical interface in the Upper Rattlesnake area. Photo: USFS

Note: Federal, state and local agency representatives (including those from the Missoula City/County Office of Planning and Grants) encouraged the writers of this plan to consider landscapes that may in future become fire interface areas, such as Plum Creek Timberland holdings. These citizens, in effect, want to address future development patterns and the potential for extreme fire behavior in areas of High and Moderate Priority for Fuel Reduction work. Other entities, such as the National Forest Protection Alliance, prefer to limit the WUI to 400 meters (about a ¼ mile) around structures. They posit creating this more limited "Community Protection Zone" is the most effective fuel-mitigation strategy in terms of affecting short-term change and long-term maintenance.

Sphere of Influence

Wildfire ignitions that occur on lands adjacent to Missoula County can spread rapidly into our local communities. This is particularly true for lands to the west of our communities, given prevailing winds. The primary land manager in much of this area is the USFS Lolo National Forest, which operates under a Forest Plan that divides the land into Management Areas (MAs). Many of the MAs in this "Sphere of Influence" for Missoula County are designated as Wilderness, Backcountry, and Mixed Forest Use. In terms of micro-level, community fire planning, it is worth recognizing and factoring in these land-use designations as well as understanding what they mean to local communities.

BASELINE ASSESSMENT CRITERIA

Those who develop a Community Wildfire Protection Plan (CWPP) can use a variety of criteria to determine their priorities for fuel reduction projects. Obviously, there are common data needs, such as fuel loadings and population density to assess risk, but there are no national mandates as to which factors to consider or how much weight to give to each one. That remains in the local realm, which depends on budgets and expertise. Consequently, most assessments are unique to each community, although each CWPP presents its findings in terms of High, Moderate or Low Priority for Fuel Reduction, or words to that effect.

Missoula County Fire Plan Factors

- ***Assessment Criteria*** *(Weighting)*
  - ***Vegetative Fuels*** ***(35%)***
  - ***Population Density*** ***(25%)***
  - ***Critical Egress*** ***(20%)***
  - ***Slope*** ***(10%)***
  - ***Insect & Disease Mortality*** ***(10%)***
- ***Other Considerations:***
  - Fire Chiefs' Survey
  - Local Fire Response Capabilities
  - Current Mitigation Projects
  - Other Assessment Data of Note

As previously noted, project leaders for the Missoula County CWPP opted to use five criteria. They chose the categories of *vegetative fuels*, *slope,* and *insect and disease mortality* (see sidebar) because they wanted to denote the areas of the County where wildfire would most likely behave in a severe manner–meaning high flame lengths, rapid advancement, and lots of fire brands and embers (spotting). They used *population density* and *critical egress* to reveal areas with the most vulnerability to humans. They then rated these factors in terms of importance—expressed in weighting percentage. This data is explained more fully explained below (also see Appendix maps).

Note: This assessment process is ONLY the first step in a long process. Areas that we identify in this plan as High to Moderate Risk will need further (micro-level) scrutiny to implement the most effective implementation strategies. This will demand strong citizen/agency partnerships.

Fire (Management) Factors

- *Vegetative Fuels*

Preventing the rapid spread of severe (high-intensity) wildfire in the wildland/urban interface depends on the dominant vegetative fuel type and the amounts/arrangement of it that surrounds each community. Missoula County contains some 640,000 acres of the Lolo National Forest (LNF) within its boundaries, and the USFS has compiled fuel data on this land, including the most dominant categories of fuel models/ groups (grasses, shrubs, and timber), as established by the USFS document *Anderson's Aids to Determining Fuel Models For Estimating Fire Behavior (1982).*

Missoula County Fire Behavior Models

FUEL Model - Descriptions

#10 – *Moderately dense to dense timber*

#5 – *Shrub and herbaceous vegetation types*

#1 – *Grass and herbaceous vegetation types*

LOCAL FIRE ECOLOGY

A good way to assess the land's potential to burn in a severe wildfire is to examine its fire history and makeup of vegetation. Responsible for the largest landmass in Missoula County, the Lolo National Forest (LNF) describes its jurisdiction in terms of ecosystems or habitat types. These descriptions are also useful for fire planning in Missoula County.

- ***Miscellaneous Special Habitats*** *(Fire Group 0)*

  Wet Meadow and Mountain Grasslands – Herbaceous forest opening further characterized by presence of water, i.e. meadows have a water source and are frequently too wet to burn during fire season. They can carry grass fire in late summer and early fall. In some situations, especially when dominated by grass, meadows may burn in early spring following snowmelt and prior to green-up. Grasslands are maintained by light fire. Both meadows and grasslands can act as natural fuel or firebreaks.

  Aspen Groves and Alder Glades –Both are fire-dependent. Groves of quaking aspen, or quaking aspen and black cottonwood, occur on streamside sites or those that regularly experience wildfire. In the absence of fire, aspen gradually disappear. Alder glades burn infrequently, but they can burn intensely and will re-sprout from surviving underground stems.

  Note: This habitat type also includes *Forested Rock* and *Scree,* both of which are generally characterized by non-contiguous fuel clusters that can burn but with limited spread and length of intensity.

- ***Warm/Dry Ponderosa Pine Habitat Types*** *(Fire Group 2*

  Primarily fire-maintained ponderosa pine stands with grass undergrowth. Sites are typically hot, dry, south and west facing slopes at low elevations. In mature, open-grown stands the most abundant surface fuel is cured grass. Downed woody fuels usually consist of widely scattered, large trees (deadfalls) and concentrations of needles, twigs, cones, etc., near the base of individual trees. Fuel loads tend to increase in young stands. *Historic fire frequency was probably 5 to 25 years between fires*.

- ***Warm/Dry Douglas-Fir Habitat Types*** *(Fire Group 4)*

  Found at lower elevations. Primarily fire-maintained ponderosa pine stands with Douglas-fir regeneration. Characterized by relatively light fuel loads, sparse undergrowth, and generally open nature of the stands. Where dense regeneration does occur, fire was probably a thinning agent. Ground fire created open, park-like conditions in mature stands. Low probability of crown fire. . *Historic fire frequency was probably 35 to 45 years between fires*.

- ***Cool/Dry Douglas-Fir Habitat Types*** (Fire Group 5)

  Found at sites too dry for lodgepole and too cold for ponderosa pine, Douglas-fir dominates. Fuel conditions vary according to stand density, species composition, age and history. The most hazardous conditions occur in well-stocked stands with dense Douglas-fir understories. Severe, stand-replacing fires probably occurred in these areas. *Historic fire frequency was probably 15 to 40 years between fires.*

- ***Moist Douglas-Fir Habitat Types*** (Fire Group 6)

  Found at elevations of 3,000 to 6,500 feet. Douglas-fir often dominates. Fuel conditions vary according to stand density, species composition, age and history. The most hazardous conditions occur in well-stocked stands with dense Douglas-fir understories. Severe, stand-replacing fires probably occurred in these areas. *Historic fire frequency was probably 15 to 40 years between fires.*

Continued on next page….

LOCAL FIRE ECOLOGY

(continued)

- ***Dry Lower Sub-Alpine Habitat Types*** (Fire Group 8)
  Found at higher elevations. Spruce, sub-alpine fir, or mountain hemlock are the climax species. Prevalence of Douglas-fir and lodgepole pine may be due in part to periodic wildfire that sets back the invasion of sub-alpine fir and spruce. Sites contain large amounts of downed woody fuels of all sizes. Dense understories develop and provide ladder fuels to the overstory tree crowns, although some stands are devoid of such understories. Severe fire will generally favor lodgepole pine. *Historic fire frequency was probably 50 to 130 years between fires.*

- ***Moist Lower Sub-Alpine Habitat Types*** (Fire Group 9)
  Found at elevations of about 2,900 to 7,500 feet. Soils are moist or wet much of the year. Older stands are dominated by sub-alpine fir and spruce. In younger stands, Engelmann spruce is usually a major component, along with lodgepole pine and Douglas-fir, which is also represented in the overstory of older stands. Under normal moisture conditions, lush shrub/herb undergrowth usually serves as an effective barrier to the rapid spread of fire. However, deep duff and large amounts of dead fuel can result in severe surface fire during unusually dry conditions. The dominance of lodgepole pine, Douglas-fir, larch or spruce on many sites suggests these stands developed on a fire-created, mineral, soil bed. *Historic fire frequency is between 100 and 150 years*

- ***Warm/Moist Grand Fir, Redcedar and W. Hemlock Habitat Types*** (Fire Group 11)
  Often occurs on valley bottoms, benches, ravines, and protected exposures. Ten species of conifer may occur during the successional process. Western hemlock, western redcedar, and grand fir are climax species. Much of the downed woody fuel results from deadfall and occasional natural thinning. Fuel loadings average higher in all size classes. Under normal conditions, the fire hazard is normally low to moderate. Drought conditions contribute to severe, widespread fires. Stands are replaced and sites revert to pioneer species. *Fire-free intervals are reported from 50 to greater than 200 years.*

Note: Fire Groups are more fully explained in the USFS General Technical Report INT 233 (1987) "***Fire Ecology of Western Montana Forest Habitat Types***" by William C. Fischer & Anne F. Bradley.

- *Slope*

Aside from fuel types and weather factors, a landscape's topography is a leading indicator of how a wildland fire will behave once started. Topography includes slope, aspect and elevation. The last two factors speak to the aridity of a site. Project leaders preliminarily selected slope as *the* critical factor because of its immutable role in fire behavior.

Slope analysis for this plan is based on the Montana Natural Resource Information System (NRIS) digital elevation models, which were converted to display the slope distribution. The following are the slope classifications:

Excerpt from the
Fire Effects Guide

"Slope is an extremely important factor in fire behavior because the flames of a fire burning upslope are positioned closer to the fuels ahead of the fire. This dries and preheats the fuels at a greater rate than if they were on flat terrain.

By the
National Wildfire
Coordinating Group

- ***Slope Class 1 is characterized as Low (0-15% slope)***
- ***Slope Class 2 is characterized as Moderate (15.05 –30% slope)***
- ***Slope Class 3 is characterized as High (30.05 –60% slope)***
- ***Slope Class 4 is characterized as Extreme (slopes greater than 60%)***

- *Insect & Disease Mortality*

Outbreaks of insects and disease (I&D) in the tree species around Missoula County are a natural part of the landscape. However, drought and past land-management policies may have exacerbated the situation. This means, in some places, dead and live vegetation is more dense, as well as drier and perhaps more stressed than its historical levels, which could lead to a high intensity (severe) wildfire near homes and communities.

Currently, the Lolo National Forest estimates that 32% of its land inside Missoula County is I&D infested. This is based on aerially collected data, which offers insight into the number of acres killed between 1980 and 2004. Where appropriate, this criterion was further weighted High or Low.

WORTH NOTING

With increasing amounts of dead and live vegetation and an extended regional drought, it's important to note that all fuel types within Missoula County can burn at high severity under average summer conditions. Also worth noting is the number of fires that start in grasslands and then move into forestlands. These grassland or rangeland fires may not appear as intimidating as a crowning forest fire, but they can move very fast–historically killing more firefighters in the United States than forest fires. They also claim their share of structures.

Human (Safety) Factors

- *Population Density*

Homes, businesses, and other manmade structures can be easy fuel for wildfire. Knowing where they are located and how they're built (i.e. wood shake shingle roof or other vulnerabilities) is an important factor in predicting risks and hazards. USFS studies of big home-loss fires reveal that burning homes tend to ignite their neighbors. In effect, structures become another source of flames and wind-born embers, much like the original wildfire, which could still be miles away.

A crop of homes in Grant Creek, Missoula. Photo: G. Wallace

In 2002, the US Census Bureau reported 41,000 housing units in Missoula County. Ideally, the baseline map for this plan would have these structures identified and precisely marked, courtesy of satellite technology. However, the costs of such an enterprise and the ongoing, rapid growth into rural and wildland areas are prohibitive. Hence, the use of population density figures for this plan. Note that these figures do not account for routine population spikes due to tourism.

The baseline data used in this assessment process recognizes four classes of population density (provided by US Census Bureau; 2002).

Class 1 = 1 to 5 persons per square mile
Class 2 = 5 to 25 persons per square mile
Class 3 = 25 to 100 persons per square mile
Class 4 = greater than 100 persons per square mile

DEFINING OUR TERMS

Fire Risk – The potential for a fire start because there is a causative agent, such as a lightning strike, overhead power-line failure, spark from a passing car or train, escaped campfire, or children playing with matches, etc.

Fire Hazard – The density, condition, location and kinds of fuel that exist on a landscape that would influence fire behavior, which is measured in terms of intensity, rate of spread and effect.

For more definitions of terms used in this document, see the Defining Our Terms glossary in the Appendix.

- *Critical Egress*

Missoula County first mapped its limited egress (access) areas in 1994. This plan uses updated (1997) information, which is displayed on maps in polygons drawn around entire subdivisions, or groups of such. There were 37 areas identified for this project (see list in Appendix). These findings are critical for planning and implementing safe and efficient emergency evacuations. Inversely, they also point to situations where citizens and/or firefighters could be trapped, which would affect fire response and community safety.

Other Considerations

- *Fire Response Capabilities*

Project leaders consider all communities in Missoula County as having capable fire response agencies. However, they admit, daytime staffing is a challenge in smaller (volunteer-firefighter dependent) communities. What follows is an overview of local response capabilities (also see Appendix Map C):

Agency cooperation is essential to community fire protection.
Photo: MCFPA

Jurisdictions: In Missoula County, we have ten community-based, fire-response jurisdictions. Of them, only the Missoula City Fire Department has an all-paid staff. Missoula and Frenchtown rural fire districts (together covering nearly 200 square miles) have a mix of paid and volunteer firefighters. The other districts (see list on page 6) rely on citizen volunteers (even for the Fire Chief's position) to respond to structure fires, wildland fires, and other emergencies, such as vehicle accidents on the Interstate or secondary roads that run through each jurisdiction.

Additionally, as noted, the US Forest Service (USFS) and the Montana Department of Natural Resources and Conservation (DNRC) offer wildland fire response ONLY. They also offer access to national Incident and Area Command Teams and resources, when needed, such as the severe fire years of 2000 and 2003.

Note: All of Missoula County's fire agencies belong to the Missoula County Fire Protection Association (MCFPA), which serves as a sounding board for fire prevention and other fire-related needs. The MCFPA website offers a contact list for local jurisdictions as well as a link to the 1998 Community Interface Fire Plan, which captures interagency successes and fire-prevention capabilities (www.mcfpa.org).

Responsibilities: When an unwanted wildland fire ignites in Missoula County, a fire-response crew from a local fire response jurisdiction*, a USFS ranger district, and/or DNRC fire unit may respond, depending on its location. The Missoula City/County 911 Center and the USFS Missoula Area Dispatch Center use the "closest forces" concept in wildland fire dispatch.

** The exception is Missoula County Fire Service Areas, which (for the scope of this CWPP) represents Greenough/Potomac. It has no wildland fire responsibility.*

This means engines are sent regardless of boundaries (jurisdictional responsibilities). This arrangement is particularly helpful at either end of the federally recognized fire season (typically mid June through mid September). When wildfire starts early, as they did in 2000 (the first wildfire occurred on March 15), federal fire crews are not yet employed, so it is the community-based firefighter who is often first on scene.

Interagency Agreements – All fire response crews in Missoula County can leave their jurisdictional boundaries to aid a requesting agency partner. This is possible through Mutual Aid Agreements. In addition, Montana statute allows these crews to assist throughout state, when needed/possible. Automatic Aid Agreements are also utilized between most Missoula County agencies sharing boundaries. These agreements are triggered by verbal request, typically at the time of first dispatch.

Emergency Preparedness/Evacuation – Emergency evacuation procedures are the responsibility of the Missoula County Sheriff's Office. During a wildfire, the Incident Commander (in coordination and with the approval of the agencies having jurisdiction) will recommend evacuation. Routes and locations of shelters/centers depend on fire location and numbers of affected individuals, and so must be made on a case-by-case basis at the time of the Incident. Missoula County has an Evacuation Plan. For more information about it, contact the Missoula County Sheriff's Office.

Areas Without Organized Fire Response – There are approximately 22,000 acres of private land in Missoula County without an organized fire-response system. Under the terms of a Cooperative Agreement between the County Commissioners and the State of Montana, the County has assumed fire suppression responsibility in these areas from the State. Therefore, the Sheriff's Office is the official responding agency. However, historically, it's the nearest local fire crew that responds. No formal agreement for this response (between the County Commissioners and the eligible community-based, fire response jurisdiction) exists at this time.

Lands without fire protection are located throughout Missoula County. Some of the larger examples include the following areas: *Upper Miller Creek, Holloman Saddle, Ninemile Prairie, and Upper Lolo Creek. There's also some unprotected land near the Missoula Airport and the Eight-Mile area near Florence.*

Wildland Fire Response Zones

Wildland fire response in Missoula County is divided into two categories:

Non-Forested Zone
If outside an organized jurisdiction, responsibility belongs to the Missoula County Commissioners. The fire warden requests response from County fire agencies for fires within this non-forested zone.

Forested Zone
Responsibility of the USFS Lolo National Forest and the DNRC Southwest Land Office. Direct protection includes all of the forested zone areas, including the forested areas within community fire jurisdictions.

ASSESSMENT RESULTS

The assessment process for the Missoula County Project Area (using wildfire risk and human safety factors) produced no surprises for the Missoula County officials involved in this fire plan. At the start of the project, fire chiefs were asked to share their list of High Risk To Wildfire areas within their jurisdictions. The assessment findings and map support their concerns.

In general, most areas identified in Missoula County as having a High or Moderate Priority for Fuels Reduction are located within mountain drainages. They are characterized by heavy fuel loadings, increasing human development, and emergency egress/access issues. Additionally, each Priority Area is located near a more densely populated community that provides goods, services and jobs. Map D in the Appendix captures these areas.

Note: This county-level data compliments the findings of the Seeley-Swan Fire Plan, which used an assessment equation of fuel, slope and evacuation routes to determine priority areas. To determine the assessment results in that area, refer to the Seeley/Swan Fire Plan.

High-Risk-To-Wildfire Areas
Fire Chiefs' Survey Results*

Arlee Rural Fire District (See Appendix Map E)

- *#1 Grizzly Mountain Subdivision*
- *#2 Schley Creek*
- *#3 Subdivision at district boundary*

Clinton Rural Fire District (Appendix Map F)

- *#1 Donovan Creek*
- *#2 Kendall Creek*
- *#3 Wallace Creek*

Florence Rural Fire District (Appendix Map G)

- *#1 NW Corner of district boundary, west of Highway 93*

Frenchtown Rural Fire District (Appendix Map H)

- *#1 Frenchtown Face*
- *#2 Evaro Area*
- *#3 Southside Road/Petty Creek Area*
- *#4 Six Mile Area*
- *#5 Nine Mile Area*

Greenough/Potomac Fire Service Area (Map I)

- *#1 Forest Park Subdivision*
- *#2 Bear, Norman, Game Creek Area*
- *#3 Red Tail/Mystic Moon Area*
- *#4 Jordan Subdivision*
- *#5 Garnet Range Road Subdivision*

Missoula Fire Department (Appendix Map J)

- *#1 Lower Rattlesnake Area*
- *#2 Lower Grant Creek Area*
- *#3 Pattee Canyon*

Missoula Rural Fire District (Appendix Map K)

- *#1 Grant Creek*
- *#2 Rattlesnake*
- *#3 Big Flat*
- *#4 Hayes Creek*
- *#5 Lolo Creek*
- *#6 Miller Creek*
- *#7 Pattee Canyon*
- *#8 Butler Creek*

Seeley Lake Rural Fire District
Swan Valley Fire Service Area

- See Seeley/Swan Fire Plan

* *East Missoula Volunteer Fire District did not participate in this survey.*

Priority Areas

This fire plan identifies more than 22,000 acres of Missoula County (excluding the Seeley Lake/Condon area) as having a HIGH PRIORITY for Fuel Reduction. This assessment also identifies more than 300,000 acres within the Project Area (see map on Page 6) that are considered MODERATE PRIORITY for Fuel Reduction. Project leaders know that's a lot of ground, but they want to target as much of the High and Moderate Priority areas for immediate treatment as possible. All involved realize that this work is dependent on many variables (see Funding The Next Step).

Missoula County

Priority Fuel Reduction Areas

Acreage Totals

PRIORITY For Fuel Reduction	Approx. ACREAGE
HIGH	22,148
MODERATE	*334, 616*
LOW	*839,860*

See Map D in Appendix

In general, this fire plan encourages creative thinking and innovative approaches to funding treatment in HIGH and MODERATE Priority Areas, since the County does not have extensive funding available for such.

Other Assessment Data of Note

Current Mitigation Projects – The fuel-reduction work already accomplished on public and private lands is an important factor in High and Moderate Priority Areas. The Appendix contains a partial (preliminary) list of such projects on federal lands.

Fire Frequency Condition Class – Many CWPPs that cover forest environments use the USFS database of current Condition Class. This measures the frequency of fires in a particular ecosystem and assesses a numerical rating based on the number of missed fire cycles. Project leaders deemed this data too gross for use at this level, but noted that it's being adapted for community planning and, as such, will be considered in future.

CONSEQUENCES OF RISK

Based on the fires in 2003 in Ravalli County and Missoula County, the losses from severe wildfire mount quickly. The County Pre-Disaster Mitigation Plan (PDM) estimates that fire suppression costs, and structure and infrastructure losses will exceed $100 million in an extreme fire year. Other costs can include the following:

Loss of Lives –The Missoula County PDM rates wildfire as a Moderate risk, but judges its impact to the community as "VERY HIGH with a HIGH potential for casualties." County officials also worry about the health impacts of heavy smoke on vulnerable populations. Air Alerts are common during catastrophic fire seasons.

Loss of Jobs – Given the variables, it's almost impossible to calculate the cost of severe wildfire on economies and livelihoods. During the fires of 2000, evacuations and road and forest closures were common throughout western Montana, displacing countless workers, from fishing guides to residential painters. The state's tourist economy, in general, took a hit in 2000, as the media carried daily reports of high fire danger, smoke, and ash.

Loss of Taxable Value – Property-loss estimates for wildfire are also hard to figure. In future, this fire plan may be able to capture these estimates for areas rated as High and Moderate Priority. Meanwhile, the County PDM utilizes crown fire data and estimates that "approximately 6.6% of residences are in zones that have a moderate or high potential for crown fire" and that "the value of those exposed residential structures is estimated to be $284 million, with an estimated $142 million in content value. Commercial buildings within high or moderate crown fire potential areas are estimated to be $2.8 million with a content value of $2.8 million."

Loss of Sense of Safety - A University of Colorado report on the communities that experienced the Bitterroot Fires of 2000 indicates that residents faced "extra-ordinary challenges…and fire-related trauma" that may take years to over-come. Residents were stressed about the safety of loved ones, property, pets and domestic animals, and wildlife. They hated being confined indoors for weeks. This particularly impacted children who lost the normalcy of school activities.

A Community Response

"The fire devastated everything… The intensity of it was extreme. …For some it was devastating… They have nothing to leave their families, their children's' children."

"As the dry conditions continued, even thunderstorms became…"objects of terror."

From *"The Fires of 2000: Community Response and Recovery in the Bitter Root Valley, Western Montana"*

Post-Fire Effects

Bitterroot Valley residents also experienced post-fire flooding and erosion. While a natural occurrence in western Montana (the process forms the rich alluvial plains at the mouths of our mountain drainages), such landscape disturbances in the short-term are a public-safety hazard that can be minimized through community preparedness and individual/agency responsibility for at-risk landscapes. Landscapes where vegetation density may be at historic levels are at particular risk for this phenomenon.

WHAT DO WE DO ABOUT IT?

Not that long ago, the job of protecting communities and other valued resources from wildland fire appeared to belong to the firefighter. The citizen's job was to report the wildfire ignition to 911 and run in the other direction to safety. This is still true, of course, but with a trend toward more episodes of severe wildland/urban interface fire in the US, there's increasing recognition that *everyone within a community must be involved in protecting lives and property from fire*. This means there's a role for property owners, land developers, community planners, public officials, insurance agents, firefighters, and many more. And our job begins before a wildfire occurs. This demands planning and participation by those potentially affected.

COMMUNITY FIRE PLANNING GOALS

The National Fire Plan (NFP), issued in August of 2000, recognizes that fuels reduction and community assistance are key goals. The Healthy Forests Restoration Act (HFRA), adopted in 2003, has a mandate that wildfire-prone communities measure their risks and reduce their ignitability. Both the NFP and the HFRA were launched after catastrophic fire seasons. Both recognize that the country needs less severe wildfire and more prepared communities, and they ask that citizens form the necessary partnerships and approve projects that can reduce our risks of catastrophic wildfire in neighborhoods, watersheds, timberlands, wildlife habitats, recreation sites, and view sheds.

Benefits of Fire Planning and Preparation

- Increased knowledge about severe (high-intensity) wildfire and ways to limit its effects on humans, dwellings, natural resources, critical infrastructure, economies, and other community values.
- Priority status for federal fuels-reduction project funds.

Community Incentive

The Healthy Forests Restoration Act is "landmark legislation [that] includes the first meaningful statutory incentives for the USFS and BLM to give consideration to the priorities of local communities as they develop and implement forest management and hazardous fuel reduction projects."

From the Handbook:
Preparing a Community Wildfire Protection Plan

- A record of the community's preference for the methods used to reduce fuels on nearby federal lands with National Environmental Protection Act (NEPA) requirements. This "preferred alternative" streamlines federal decision making.
- A defined fuel-treatment area where we can focus funding opportunities and increase project effectiveness and maintenance of such. This area is referred to as the *wildland/urban interface* and the *community protection zone*.
- Landscapes that can withstand periodic wildfire (natural fire regimes, where possible) **and** sustain safe human habitation.

Minimize Fire Intensity Before; Maximize Recovery After!

MISSOULA COUNTY FIRE PLANNING

Fire officials and emergency responders created Missoula County's first Community Fire Interface Plan in 1998. Oriented to homeowner education and still available on the Missoula County Fire Protection Association website, this plan advocates awareness of wildfire risks and increased stakeholder (citizen, landscaper, builder, insurance agent, planner, etc.) participation in solutions. A product of the '98 plan, the MCFPA website (www.mcfpa.org) also provides information on fire danger, burning permits, and Firewise landscaping and construction.

The County Director of the Office of Emergency Services spearheaded this Community Wildfire Protection Plan (CWPP) in late 2004. Using a U.S. Department of Interior Bureau of Land Management (BLM) funding agreement, the Director hired the coordinator/writer of the '98 fire plan, and engaged the County's Geographic Information System (GIS) specialist to handle the assessment portion of the project.

Initially, this team collaborated with two fire officials. In January of 2005, they convened a larger, more diverse group, consisting of MCFPA members and other interested individuals (see Appendix). With their guidance, the Coordinator scheduled public outreach and began writing a plan outline; the GIS specialist began the assessment/mapping process. Project completion was set for July.

Project leaders anticipate regularly updating this plan.

Note: The development group that developed this Missoula County CWPP included some of the citizens that created the Seeley/Swan Fire Plan.

This Community Wildfire Protection Plan (CWPP) is an umbrella document that makes all Missoula County communities eligible for priority federal funding. The Seeley/Swan Fire Plan is a companion document to this CWPP. All future, micro-level plans, such as the Blackfoot/Clearwater Fuels Mitigation Plan, will be subsets of this County-level fire plan.

A CWPP must be collaboratively developed by local and state government representatives in consultation with federal agencies and other interested parties…

Healthy Forests Restoration Act

Planning Tiers

Just as fire seems to spread uniformly fast across a vast terrain, but it's actually behaving differently at each hill or valley or home, a County-level community fire protection plan must cover the big, but provide for the small picture. This plan deals in gross scales and macro-level strategies. Micro-level thinking can only occur at the community/neighborhood or watershed level, which is the main reason this plan is considered a living document, a primary module for what will most likely become a multi-module document linked to other County/State initiatives.

- ***STATE*** –The Montana Department of Natural Resources and Conservation (DNRC) validates all CWPPs developed within the state.
- ***COUNTY***– The Missoula County CWPP, which includes the Seeley/Swan Fire Plan, is an appendix to the Missoula County Pre-Disaster Plan. The CWPP will consider goals of other County plans, as needed.
- ***LOCAL*** – Future CWPPs, developed at the community/neighborhood level planning through local fire jurisdictions, will tier to this County-level plan.
- ***REGIONAL***–Consider collaboration opportunities with bordering counties via CWPPs findings/goals.

Public Outreach

National CWPP guidelines advocate collaboration in fire planning. This is standard practice in Missoula County's fire response community. For this plan, project leaders organized a series of public meetings—offered over a six-week period in the spring of 2005—for each fire response jurisdiction. One of the first meetings targeted Missoula City/County officials. Most occurred at fire stations during regular Fire District Board of Trustees meetings. Two were held in hotel conference rooms, including the last gathering, which asked County stakeholders (see invite list in Appendix) to attend. Fire officials advertised by word-of-mouth and targeted mailings. A PowerPoint Presentation on the project was used at most of these gatherings.

Clinton's Fire Chief at a Trustees/Fire Plan meeting.
Photo: G. Wallace

Additionally, the Plan Coordinator issued two news releases (see Appendix). The first, announcing the project, attracted the television media. The Clark Fork Chronicle newspaper and the Bitter Root Trails newsletter published the second release, which outlined the public meetings schedule. Public radio also picked up on this release. The Missoulian and local television stations are expected to cover a third release, announcing project findings. All material was posted on the Missoula County Fire Protection Association website. Additionally, the County placed an ad in The (Sunday) Missoulian to promote the last (stakeholders) meeting.

Questions for the Public

1) The national (default) definition of the wildland/urban interface is a mile and half from structures. Would you suggest any changes?

2) What types of hazardous fuel treatment methods would you suggest be used on federal ground?

3) What types of fuel disposal methods would you suggest for private ground?

4) What are your areas of geographic concern?

5) What do you think is the highest priority area within your fire district?

6) What, if any, regulatory approaches do you think the County should support in reducing the risk of wildfire to local communities?

Meeting Results

Public participation was minimal at each meeting (see Sign-In Sheets in Appendix). But a series of questions (see sidebar) helped generate meaningful discussion about local fire protection and forest management priorities. Outreach meetings also captured the need for ***consistent*** community education, particularly at the neighborhood or drainage level on a ***person-to-person basis***. MCFPA agency participation was good (as usual).

Meeting Handouts

The public was offered handouts (see Appendix) that captured project goals, assessment criteria and initial findings, a list of USFS land-management/forest treatment methods, and a set of six questions. Five of these questions arose from national guidance. The sixth came from a county commissioner struggling with the idea of allowing more development in limited access areas (there are no rules to the contrary). Handouts were also given out during the burn permit process.

TREATMENT RECOMMENDATIONS

For Federal and Private Lands Within The Missoula County Project Area

Project leaders, and individuals interested in this community fire planning process, agree that too many acres of public and private lands within Missoula County are at risk of catastrophic wildfire and that steps can be taken to minimize the growing threat. This fire plan recognizes that there are several ways to accomplish this goal. It also acknowledges that risk reduction decisions must be made on a case-by-case basis, utilizing the knowledge of local fire officials, affected residents, and other community stakeholders. This approach provides maximum input, while allowing the County to make progress on a vital community safety issue. Ultimately, our goal of living more compatibly with wildfire can only be achieved by citizen awareness and action.

> The Community Wildfire Protection Plan (CWPP) must identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment.
>
> – From the Handbook:
> *Preparing a Community Wildfire Protection Plan*

Identify and Prioritize

National guidelines ask that we prioritize the lands within our project area in terms of High, Moderate or Low Priority for Fuel Reduction. We've accomplished this (see Assessment section and Appendix maps). However, it's important to note here that *this County-level fire plan does not set treatment priorities* for the County. Instead, local fire jurisdictions are asked to partner with stakeholders in High and Moderate Priority Areas–depending on response capabilities, funding, and homeowner/agency support.

Types & Methods of Treatments

We're also asked to recommend "the types and methods of fuel-reduction treatments" that will be done in priority areas. We posed this nationally mandated question to citizens via the news media and public outreach (one handout describes typical forest-stewardship practices - see Appendix). Generally, this question elicited a non-response, which project leaders interpreted to mean "no strong preference for treatment," or a comment withheld/pending a specific project.

Accordingly, we ask readers of this plan to consider the following: *What principals, guidelines or vision of future conditions should we use to guide planning and implementation of hazardous fuel reduction projects on the public lands? How should public land managers involve us (the general public and neighboring land owners) in the planning and implementation of these projects?*

This fire plan addresses some of the above questions. However, most answers will have to come through future revisions of this plan or via neighborhood-supported (micro-level) action modules attached to it.

> The Healthy Forests Restoration Act of 2003 *"gives priority to projects and treatment areas identified in a CWPP by directing federal agencies to give specific consideration to fuel reduction projects that implement those plans. If a federal agency proposes a fuel treatment project in an area addressed by a community plan but identifies a different treatment method, the agency must also evaluate the community's recommendation as part of the project's environmental assessment process."*
>
> National Guidelines

Fuel Treatment Goals and Guidelines

This fire plan recommends that federal and state personnel move quickly to reduce hazardous fuel buildups on public lands surrounding Missoula County communities. We ask that this work be done in areas rated as High Priority and Moderate Priority for Fuel Reduction by this fire plan assessment. We further request that private landowners, with large tracts and small, address their wildfire risks in a timely manner. Finally, we remind that all lands will need maintenance (retreatment) in five to ten years and that we only have so much money.

Project leaders also offer the following suggestions to support community-safety goals:

Federal (Public*) Lands

- *Treatment Priorities*
  - Select projects in High and Moderate Priority Areas for Fuel Reduction (preferred) that maximize safety, or best protect community values.
- *Treatment Strategies*
  - In lower and mid elevation, ponderosa pine/larch/Douglas fir forests, remove understory vegetation to eliminate fuels that lead to the canopy of mature, healthy trees; so as to reduce the likelihood of fast-moving, tree-killing fire. Additionally, seeding, sapling or pole-sized stands with little or no overstory may need thinning to reduce crown density and fuel continuity.
  - In higher elevation, lodgepole pine forests, select projects with enough scale so as to reduce fire severity around communities, critical infrastructure, or other community values, so they can survive without the immediate intervention of firefighters.
  - Design projects specifically to reduce hazardous fuel levels. Timber harvest and ecosystem restoration may be project outcomes. However, emphasis is on fuel reduction. Sell material targeted for removal, if it is profitable to do so.
  - Use existing fuel-mitigation projects to create perimeters around communities, roadways, railway lines, powerlines, etc.
  - Prescribed fire use is allowed, where/when appropriate, i.e. under all circumstances community safety must be preserved.
- *Machinery*
  - Make equipment choices that minimize disturbance to the land and prevent soil erosion.
- *Biomass Disposal*
  - Choose methods for disposing of unwanted vegetation (slash) that maximize profit and minimize future risk to landscapes.

Signs of work to limit the path of severe fire in the WUI.
Photo: Missoula Rural Fire District (MRFD).

** This fire plan focuses on federal lands but recognizes that other public land managers in Missoula County have responsibility for community wildfire safety. The Montana DNRC—tasked with maximizing revenue from state lands to support the Montana school system–relies on forest management practices to accomplish fuel reduction goals. It facilitates such work wherever possible, including cross boundaries. Additionally, Forest Service and Bureau of Land Management lands are governed by separate, existing laws, regulations and land-management actions that are directed by Decisions issued for Land Use Plans and Project Plans.*

Private Lands

- *Treatment Priorities*
  - Select projects in High and Moderate Priority Areas that can increase safety for individual home sites and/or home clusters.
  - Recognize that untreated areas on treated property can carry wildfire to structures on that property or adjacent properties.
- *Treatment Strategies*
  - In all fuel types, limit vegetation in the Home Ignition Zone. For specifics, see Community Preparedness below.
  - In densely forested lands that traditionally burn in severe fires, as well as for homes located on slopes, implement a large enough Home Ignition Zone (i.e. maximum 150 feet) so the structure can survive without the immediate intervention of firefighters.
- *Machinery*
  - Make equipment choices that minimize disturbance to the land and prevent soil erosion.
- *Biomass Disposal*
  - Choose methods for disposing of unwanted vegetation (slash) that minimize future risk s.
  - Fire use for slash disposal is allowed, per County regulations and guidance.

COMMUNITY PREPAREDNESS

It's a basic premise of this fire plan that in "being prepared," communities can minimize—or even prevent–the more devastating effects of wildfire and, in doing so, better safeguard our community landmarks and personal resources. Achieving this goal will demand every resource our communities can provide—from firefighters to community planners and elected officials to property owners.

Note: Currently, Missoula County is blessed with local officials and community leaders who have attended a national Firewise Communities Workshop, offered through the National/Wildland Urban Fire Program from 1999-2003. The Firewise website still offers workshop material (courtesy of program sponsors: The National Wildfire Coordinating Group). This fire plan recognizes the value of this base of fire knowledge and recommends its nurturing as new community leaders step forward.

A landscaping buffer of green grass and well-spaced trees is key to home survival in the wildland/urban interface. MTGF Photo

Reducing the Ignitability of Structures

During severe (multiple home loss) wildfires, ongoing studies reveal that structures burn because of their composition and what immediately surrounds them. This means that property owners, not public land managers or local firefighters, have control over the wildfire safety of a particular site. To meet the national mandate that community fire plans assist homeowners with reducing the ignitability of structures, this CWPP relies on the Firewise Communities

Program and its website (www.firewise.org) to recommend techniques that homeowners (and other stakeholders, i.e. land developers) can use to reduce the amount of time that flames and embers can linger, thus increasing the structure's chances for survival. This work can also reduce the severity of fire's effects on surrounding vegetation, which is difficult to insure against damage.

A CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the area addressed by the plan…

– From the Handbook:
Preparing a Community Wildfire Protection Plan

Firewise Landscaping

This plan recommends that Missoula County wildland/urban interface dwellers create a Firewise-landscaping buffer around their homes, garages and outbuildings so as to better safeguard their property from wildfire. The Home Ignition Zone can range from between 30-150 feet or more from the structure, depending on the characteristics of the home site. Fuel-reduction work in this zone can involve vegetation removal, replacement and/or rearrangement and is necessary regardless of the priority rating for each site. Bottom line: Homes located in Low Priority areas are not *without risk* of catastrophe. With the right conditions, it can occur anywhere.

What follows is a few key landscaping considerations from the Firewise checklist:

"To create a Firewise landscape, remember that the primary goal is fuel reduction. To this end, initiate the zone concept. Zone 1 is closest to the structure; Zones 2-4 move progressively further away.

- *Zone 1. This well-irrigated area encircles the structure for at least 30' on all sides, providing space for fire-suppression equipment [if available] in the event of an emergency. Plantings should be limited to carefully spaced, low-flammability species.*
- *Zones 2-3. Low flammability…low-growing plants and well-spaced trees in [these] areas.*
- *Zone 4. Furthest from the structure…natural area. Selectively prune [so that the lowest limbs are 6' to 10' feet up from the ground] and thin all plants [a minimum 15' feet between tree canopies) and remove highly flammable vegetation.*

Also remember to:

- *Take out the ladder fuels—vegetation that serves as a link between grass, [shrubs or brush] and treetops.*
- *Give yourself added protection with "fuel breaks" like driveways, gravel walkways and lawns.*

While maintaining a landscape:

- *Remove leaf clutter [pine needles] and dead branches.*
- *Mow the lawn regularly.*
- *Dispose of cuttings and debris promptly, according to local regulations.*
- *Store firewood away from house.*
- *Be sure the irrigation system is well maintained.*

Note: The Montana Nurseryman and Landscapers Association's Firescaping brochure provides guidance for recognizing low flammability plants. Members of the Missoula County Fire Protection Association make this brochure and similar data available through local fire stations and agency offices.

Firewise Construction

The same principle—of preventing fire from lingering in any one place—applies to structures as well vegetation. USFS research reveals that it's "the little things" that cause home destruction during wildfire: a bird's nest in your window lattice catches fire, embers fly into your attic vent or barn rafters, a wooden walkway in dry grass begins to burn, etc. This fire plan recognizes these findings and encourages property owners and land developers within Missoula County to adopt Firewise construction practices, i.e. modifying existing structures, when and where possible, and building only Firewise communities in future.

The following is excerpt from the Firewise Construction checklist:

"Remember the primary goals are fuel and exposure reduction. To this end:"

Structure Design/Maintenance

- *"Use materials that are fire-resistant or non-combustible whenever possible*
- *For roof construction, consider Class A asphalt shingles, slate or clay tile, metal, cement and concrete products, or terra cotta tiles"*
- *On exterior wall facing, stucco or masonry are much better choices than vinyl, which can soften and melt.*
- *Smaller [window] panes hold up better in their frames than larger ones. Double pane glass and tempered glass are more reliable and effective heat barriers than single pane glass.*
- *Install non-flammable shutters on windows and skylights.*
- *To prevent sparks from entering your home through vents, cover exterior attic and underfloor vents with wire screening no larger than 1/8 of an inch mesh. Make sure undereave and soffit vents are as close as possible to the roofline.*
- *Keep gutters, eaves and roofs clear of leaves and other debris.*
- *Make periodic inspections of your home, looking for deterioration such as breaks and spaces between roof tiles, warping wood, or cracks and crevices in the structure."*

Attachments

- *"Use masonry or metal as a protective barriers between fence and house.*
- *Use metal when constructing a trellis and cover it with high-moisture, low-flammability vegetation.*
- *Prevent combustible materials and debris from accumulating beneath patio decks or elevated porches. Screen or box-in [these] areas with wire screen no larger than 1/8-inch mesh.*
- *Make sure an elevated wooded deck is not located at the top of a hill where it will be in direct line of fire moving up slope. Consider a terrace instead.*

Property Access

- *"The driveway and access roads should be well maintained, clearly marked, and include ample turnaround space [for fire trucks] near the house. Also provide easy access to fire service water supplies, whenever possible."*

Existing Regulations

At this time, only a few Firewise landscaping concerns (road widths and grades) are captured in the Missoula County subdivision regulations. Construction decisions are covered by the building codes adopted by the state and local jurisdictions. County fire officials have had some success working with developers using the Uniform Fire Code. Additionally, the State of Montana has created some wildland/urban interface guidelines (for more information, contact the DNRC).

Overall, project leaders rate existing laws as fairly weak. They also acknowledge that regulations require scarce commodities (staffing and funding) to enforce and that most residents resist the use of regulation.

This community fire planning process, of course, has generated discussion about more regulations (see Public Comments in Appendix). However, at this time, project leaders endorse the idea of not prohibiting land use and building/development in Missoula County. Rather, they encourage the adoption/execution of known guidelines/Firewise suggestions.

Community Assistance

Missoula County residents have a variety of avenues for addressing their wildfire safety issues. All the members of the Missoula County Fire Protection Association (MCFPA) offer some type of assistance.

A sign of our mitigating times in Western Montana
USFS photo

- Municipal and rural fire district personnel (depending on the jurisdiction's resources) can assist with fire-risk assessments and mitigation work.
- State foresters regularly make on-site visits and offer treatment recommendations, as requested by individuals or multi-agency partners.
- The Bitter Root Resource Conservation and Development, Inc., area also offers forester assistance and a growing list of contractors capable of executing a variety of fuel-reduction tasks.
- The Lolo National Forest (US Forest Service) Supervisors Office and affected ranger districts also offer technical assistance and cost-share incentives for WUI dwellers.

Note: More information on the MCFPA can be found at www.mcfpa.org. More information this topic of Community Assistant is provided in the following chapter "Funding 'The Next Step'."

FUNDING "THE NEXT STEP"

Stakeholders in the goal of reducing Missoula County's risk to severe wildfire are encouraged to work with their local fire officials and to concentrate fuel-reduction work in known priority areas (see Fire Chiefs' Survey and Assessment Results/Mapping). However, the fact is that only three of the County's fire response districts have paid, full-time personnel. The others are staffed by volunteers, who are already taxed by training and incident response requirements. Asking them to spearhead fuel-reduction work on private land is a hardship, particularly when it comes to attracting future funding for project administration and implementation.

Note: Fuel-reduction project funds will likely come through citizen or agency efforts in priority areas. Missoula County should not be relied upon to provide project funds or the means for continual planning. However, all applications for such must go through a County-designated, fire-response agency.

Funding Opportunities

Though budgets are limited and constantly fluctuating, there are several sources for grant-funded, community fuels-reduction projects in Missoula County. Generally, they include a funds match, either through cash, in-kind donations, or sweat equity. What follows is a brief listing of those grant sources:

Missoula County earmarks a certain portion of its Forest Service (PL 106-393 Title III) community assistance funds for the Missoula County Fuels Mitigation Program. This usually amounts to $80,000 to $100,000 annually. The deadline for application varies, but generally it's in the spring.

Missoula County Fuels Mitigation Program

Objectives
- removal of fuels
- education on sustainability
- creation of maps
- improving address visibility

Ground Rules
- Money gets spent "on the ground" in areas protected by a local fire district. Strictly limit dollars spent on administration.
- Collaboration occurs between fire jurisdictions and local community groups

This program recognizes that one treatment method does not fit all. It encourages creative thinking non-traditional partnerships, and coordination of fuels treatment on private property with adjacent state and federal land.

This funding source is solid through the end of its five-year cycle (2006). After that, it may or may not be reauthorized by Congress. Project leaders also wish to acknowledge the contribution of local fire districts to County infrastructure through staff time, etc.

Montana State Department of Natural Resources and Conservation (DNRC) offers two National Fire Plan (NFP) fuels mitigation grant programs. Though similar in intent and funded via the USDA Forest Service, they have different requirements/administration.

- *The Western States Fire Managers' Wildland Urban Interface Grant Program* uses a portion of the Fire Assistance monies for 17 western states and protectorates to fund fuel treatment on private land. Funding is a 50-50 (dollar for dollar) match. It allows vegetation management only (no infrastructure, i.e. dry hydrants, road work allowed). Applications are available in the spring (May and June), with a typical deadline in the fall (September or October).

- *The Community Protection Grant Program,* according to the DNRC's Quick Facts on Fuels handout, uses Congressionally authorized monies "to minimize losses on private lands adjacent to federal lands where fire-related activities are planned." Approved projects must include fire use on private lands (i.e. prescribed fire, pile burning, etc.) and this fire use must occur before treatment activities on federal lands. This mandate will "mitigate potential losses from subsequent federal treatments." The affected lands cannot have infrastructure present. Application opportunities vary annually and depend upon US Forest Service treatment targets.

  Note: Funds from this program are also called Stevens Money after the Alaska Senator who created funding authorization for this Community Protection Program.

US Department of Interior/Department of Home Land Security funding opportunities exist via, respectively, the Bureau of Indian Affairs (BIA) and the Bureau of Land Management (BLM), and the Federal Emergency Management Agency (FEMA).

- *BIA Grants* are available for fuels mitigation on lands within reservations, regardless of ownership.
- *BLM Funding Assistance is* available for planning and fuels treatment, where a plan already exists. Funds (requiring a 90/10 match) are also available for education and outreach. Application deadline varies by field office, but usually it occurs in the spring.
- *FEMA grants are available through the Pre-Disaster Mitigation Program. More information on timelines, criteria, etc., is available at www.fema.gov.*

NOTE: The Firewise Communities Program, funded by the National Wildfire Coordinating Group through its National Wildland/Urban Interface Fire Program, offers additional information on grants and funding sources (see www.firewise.org).

Project Implementation Models

Grant-funded, fuel-reduction work can be accomplished in a variety of ways in Missoula County. This variety sometimes confuses the public, but choice is good, particularly when championed by the local fire jurisdiction and its citizen partners. The following is an overview of locally used implementation models. Each offers advantages and drawbacks that the pertinent agency can best explain.

Fire Department/District Mitigation Crews - Currently, a municipal fire department and two rural fire districts within Missoula County operate small, seasonal mitigation crews composed of firefighters. Missoula Fire Department utilizes paid firefighters; Frenchtown Rural uses volunteer firefighters, and Missoula Rural employs its firefighter cadets. These crews are devoted to fuel-reduction on private ground within their jurisdictions. Benefits for this approach include on-site firefighting equipment. With the rural district programs, most homeowners are charged a fee (typically $100-200 a day) for work within the Home Ignition Zone. Those funds are then used to sustain the project, either by supplementing grant funds or paying for project costs, i.e. equipment maintenance, fuel, etc.

Note: In 2005, these two separate district crews worked together to create a Firewise development in a third fire response jurisdiction (Clinton Rural). This development is set to become the District's first Firewise Community/USA community.

RC&D Community Forester & Private Contractor(s) - The Montana DNRC contracted with the state's Resource Conservation and Development (RC&D) districts to implement its National Fire Plan monies (offered through the Western States Grant or Community Protection Grant programs). This approach allows the DNRC to expand its staffing capabilities. Locally, this partnership is with the Bitter Root RC&D, which has jurisdiction responsibility for Missoula County as well as adjacent Mineral County (to the west) and Ravalli County (to the south). This office has a Community Forester who is responsible for coordinating homeowner/agency partnerships in priority areas; inspecting properties, and making fuel-reduction recommendations, as well as acquiring additional grant monies. Homeowners can then hire local contractors to execute goals. Cost match is 50/50 or 75/25 with a maximum homeowner cost of $500. Work must be done before funds can be awarded.

Note: As of 2005, the Bitter Root RC&D fields a Community Forester in Ravalli and Mineral Counties and in the northern portion of Missoula County, in the Seeley/Swan area.

Private Foresters with reputations for solid, environmentally sensitive, cost-efficient work abound in western Montana. The Bitter Root RC&D has developed a list for homeowners. For more information contact them at 363-1444 ext. 5.

Non-Profit Agencies are also offering services to western Montana residents. For example, the Montana Conservation Corp—a non-profit organization designed to help students give back to the community and learn new skills while earning a small stipend—successfully implemented cost-effective, fuel-reduction work in nearby Granite County, under the leadership of the Granite Conservation District and the Missoula Ranger District of the USFS.

YOUR "*NEXT STEP*" TIPS

Since so much of the work of community fire preparedness must be carried out by private individuals willing to identify and mitigate their specific hazards and risks, we offer the following tips on what local community leaders might make happen next:

- Focus attention through local homeowners association, or develop a local action group
- Recognize the specific factors (prevailing winds, fire history, etc.) that influences your community, neighborhood, or drainage in terms of wildfire
- Determine what you want to do, can do, and how it'll be done
- Work with fire specialists, where possible, to make decisions
- Seek funding sources

Note: End-of-project reports about grant-funded work can be found on the National Fire and the Lolo National Forest websites, among others.

WHAT DOES SUCCESS LOOK LIKE?

National guidelines offer some perspective on which projects to tackle first: They suggest concentrating on High Priority Areas with the *most hazards, people, and community value*. Public comments received during this planning process suggest we focus on areas with *high-density fuel loads, limited access and High to Moderate population densities*. This fire plan does not rely on a stated formula. Instead it asks that officials from the affected fire jurisdiction and residents make these decisions at the appropriate time, so as to best fit local culture and capabilities.

Project Priorities

Concentrate fuel reduction work in areas of highest priority and effectiveness: highest values, greatest hazards, highest population density, high fire occurrence…

Healthy Forests Restoration Act (2003)

The Missoula County Strategy

In general, the strategy for Missoula County officials is to continue to advocate/support programs that educate the public about individual responsibilities for preparedness and maintenance of such. In addition, this fire plan offers the following standards for prioritizing fuel reduction work within fire response jurisdictions:

- Consider the entire community (neighborhood) and apply awarded funds to projects with the greatest number of homes at risk and the greatest number of acres to be thinned.
- Recognize that implementation is dependent on funding and that a district's highest priority may not be funded first. For example, applying a $50,000 grant towards a $200,000 project may not offer the best cost-benefits.
- Complete projects and change predicted outcomes.

Treatment Targets

More than 22,000 acres within 1.5 miles of Missoula County populations (communities as identified by this fire plan) are rated as having a HIGH PRIORITY for Fuel Reduction Work, based on fire risk and human safety factors. Another quarter million acres–just within the project area (not the County's entire wildland/urban interface area)–is rated a MODERATE PRIORITY. It all needs treatment and then regular Firewise maintenance (compared to the routine of mowing the lawn) thereafter.

Cost Estimates– Using DNRC provided data for treatment-costs-per-acre, it could cost between $400 and $2000 per acre to treat all of our HIGH and MODERATE Priority Areas. In order to accomplish this in a reasonable timeframe (a ten-year cycle), the County would need about $6 million annually. This fire plan looks to the National Fire Plan and state resources to accomplish this goal. It also acknowledges that needed fuel-reduction work and maintenance of such will also (always) require private effort to accomplish.

Plan Accountability

Accountability for project success and failures is an objective in the National Fire Plan and supporting documents. Locally, it's an important sensibility as well. The living nature of this

community wildfire plan allows for consistent monitoring opportunities. The County Office of Disaster and Emergency Services (OES) will store all project data and serve as a clearinghouse for documenting future local accomplishments. Each update will be appended to this plan and posted on the County and other applicable websites. The County will also keep a hard copy of the Seeley Swan Fire Plan.

Plan Updates/Addendums

This fire plan will be updated regularly, if not annually. The Missoula County OES will ensure that it continues to coordinate with other existing plans at the County level or within the fire community. This fire plan allows the County to spend grant funds to accomplish these updates.

All community plans created within Missoula County after the creation of this plan will be guided by and appended to this plan. They must be created through the local fire jurisdiction and should not rely on County funding for creation or implementation, although it will assist in such where/when possible.

Recommended Action Items

The National Fire Plan and Healthy Forests Restoration Act emphasize action. This fire plan offers the following tasks, generated from public meetings, to increase our public safety:

Wildfire Response – *Improve Fire Prevention & Suppression*	***Status***
○ *Update mutual aid agreements within Missoula County*	*Accomplished*
○ *Update fire response pre-plans in High/Moderate Risk area*	*In Progress*
○ *Create process to provide local knowledge to Incident Command Teams*	*Accomplished*
○ *Formalize agreement for fire response in unprotected County lands*	*Pending*
Hazard Mitigation – *Reduce Hazardous Fuels*	
○ *Develop a mechanism that can assist with grant writing, education, project implementation, plan coordination, etc.*	*In Progress*
○ *Assist fire jurisdictions/community groups with mapping*	*As needed*
○ *Post reports on appropriate websites about past fuel-reduction projects*	*In Progress*
○ *Encourage economic opportunities for wildfire risk reduction.*	*In Progress*
Community Preparedness – Improve/promote community assistance	
○ *Update education materials, targeting High Priority Areas*	*Future Action (2006)*
○ *Publicize fuel-reduction reports and other useful data*	*In Progress*
Structure Protection – *Reduce ignitability of structures*	
○ *Encourage use of fire-resistant materials/design of non-combustible homes*	*Pending (2006)*
○ *Assist planners with comprehensive planning to mitigate disasters*	*Future Action*
○ *Encourage review of subdivision regulations for coordination with this fire plan.*	*In Progress*
○ *Consider developing a County mitigation crew or enabling cross-boundary crews*	*Accomplished*

CONCLUSION

The creators of this fire plan pledge to implement the above-recommended actions and to work diligently to design and implement fuels-reduction projects that can increase our ability to live safely with wildfire. Anyone who reads this plan is asked to help in this endeavor.

MISSOULA COUNTY
Community Wildfire Protection Plan (CWPP)

APPENDIX

Items

Project Leadership List

- *Development Group/Team Members*
- *MCFPA Members*

Project & Priority Assessment Maps

- *Wildland/Urban Interface (Map B)*
- *Fire Districts/Communities (Map C)*
- *Priority Assessment (Map D)*
- *District Priority Areas (Maps E-K)*

Mitigation Projects & Egress Areas

Public Outreach Materials

Defining Our Terms Glossary

Suggested Readings & Websites List

PROJECT LEADERSHIP

Development Group Members

The following is a partial list of folks who helped develop this Community Fire Protection Plan. It is a partial list because, by project's end, it was difficult to keep track of all who provided input during different stages of its development. Accordingly, if your name is not listed here, we apologize and thank you for your efforts to live Firewise.

***Paula Rosenthal**, Montana Department of Natural Resources and Conservation*
***Steve Holden**, Montana Department of Natural Resources and Conservation*
***Jamie Rosdahl**, SW Land Of., MT Dept. of Natural Resources and Conservation*
***Chuck Stanich**, Lolo National Forest, USDA Forest Service*
***John Waverek**, Missoula Ranger District, Lolo National Forest*
***Tim Love**Seeley Lake Ranger District, Lolo National Forest*
***Laura Ward**, Ninemile Ranger District, Lolo National Forest*
***Shelly Witt**, Confederated Salish & Kootenai Tribes*
***Byron Bonnie**, Bitter Root Resource Conservation & Development*
***Frank Maradeo**, Seeley Lake Rural Fire District*
***Jeff Cyr**, Clinton Rural Fire District*
***Bob Rajala**, Missoula Fire Department*
***Jason Diehl**, Missoula Fire Department**
***George Hirschenberger**, USDI Bureau of Land Management*
***Shelagh Fox**, USDI Bureau of Land Management*
***Jake Krellick**, National Forest Protective Alliance*

Development Team Members

The following folks provided the principal input to development of this CWPP:

Jane Ellis**, Missoula County Office of Emergency Services **(Project Leader)
***Scott Waldron**, Chief, Frenchtown Rural Fire District*
***Bill Colwell**, Deputy Chief, Missoula Rural Fire District*
***Glenda Wallace**, Writer/Editor, Independent Contractor*
***Sonja Reeves**, GIS Specialist, Missoula County and Frenchtown Rural Fire District*
***Bob Reid**, Missoula County Office of Emergency Services*

Missoula County Fire Protection Association (MCFPA) Members

www.mcfpa.org

Arlee Rural Fire District
Clinton Rural Fire District
East Missoula Rural Fire District
Florence Rural Fire District
Frenchtown Rural Fire District

Greenough/Potomac Volunteer Fire Department
Missoula Fire Department
Missoula Rural Fire District
Seeley Lake Rural Fire District
Swan Valley Volunteer Fire Company

Montana Department of Natural Resources and Conservation
Southwestern Land Office
- ***Anaconda Unit***
- ***Missoula Unit***

USDA Forest Service
Lolo National Forest
- ***Missoula Ranger District***
- ***Ninemile Ranger District***
- ***Seeley Lake Ranger District***

<u>Affiliated Agencies</u>

Missoula County Office of Disaster and Emergency Services

Missoula City/County Health Department

Confederated Salish and Kootenai Tribes

Bitter Root Resource Conservation & Development Council

USDI Bureau of Land Management

Special thanks to the National Weather Service,
Missoula Station

Missoula County
Current/Completed Federal Fuel-Reduction Projects
As of June 2005

USDA Forest Service Missoula Ranger District

Projects that are done:

- Northside Fuels Units* – Evaro area
- Blue Mountain PCT**
- Deep Gilman EMB*** - Deep Creek area
- Iris Point EMB – Clinton/Rock Creek area
- Johnson EMB – Evaro area
- Northside EMB – Snobowl and Evaro area
- O'Keefe EMB – Evaro area

Ongoing Projects:

- Pattee Blue Fuels Units – Pattee Canyon & Blue Mtn
- Pattee PCT

Not Sure of Status:

- Rattlesnake EMB's
- Rattlesnake Proposed EMB's

USDA Forest Service Ninemile Ranger District

Ongoing Projects:

- Frenchtown Face

USDI Bureau of Land Management (BLM)

The BLM has a number of small fuels reduction projects that are ongoing within the Blackfoot River Corridor.

Confederated Salish & Kootenai Tribes (CSKT)

The Confederated Salish & Kootenai Tribe has a few fuels-reduction projects going as well.

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* *Fuels Units = Commercial Thin and/or Understory Slashing*
** *PCT = Pre-Commercial Thin (includes Douglas-fir understory slashing as part of ponderosa pine thinning.*
*** *EMB = Understory Burn*

Missoula County
CRITICAL EGRESS AREAS

GLACIER DRIVE (CONDON)
GUEST RANCH ROAD
RUMBLE CREEK
CRESCENT MEADOWS
DOUBLE ARROW
PLACID LAKE
KRAMER CREEK
BEAVERTAIL HILL
WEST OF ROCK CREEK
SCHWARTZ CREEK
WALLACE CREEK
KENDALL CREEK
DONOVAN CREEK
HOLE IN THE WALL (POTOMAC)
MARCO FLATS (PRIVATE)
TROUT LANE (BLACKFOOT)
BEAR CREEK
NINEMILE
SIXMILE
HOULE CREEK
SORREL SPRINGS
MILL CREEK (FRENCHTOWN)
BUTLER CREEK
GRANT CREEK
RATTLESNAKE VALLEY
SHERMAN GULCH
HORSEBACK RIDGE
O'BRIEN CREEK
PATTEE CANYON
MILLER CREEK
MILL CREEK (LOLO)
SLEEMAN GULCH
BALSAMROOT
MORMON CREEK
BITTERROOT VALLEY S OF LOLO
PETTY CREEK
DEER CREEK

Missoula County

PUBLIC OUTREACH MATERIALS

MISSOULA COUNTY

Community Wildfire Protection Plan

2005 Public Outreach Meeting Schedule+

- **Frenchtown** RFD Board Mtg.* – **March 14** @ 7:00 pm – Frenchtown Fire Station #1
- **County/City** Mtg. – **March 31** @ 3:00 pm – County Courthouse Rm. 201
- **Greenough/Potomac** FAA Board Mtg.* – **April 5** @ 7:30 pm – Potomac Station
- **Missoula City** FD Mtg. – **April 11** @ 7:00 pm – Holiday Inn Express, Missoula
- **Missoula Rural** FD Board Mtg.* – **April 12** @ 7:00 pm – Missoula Rural Station #1
- **Clinton** RFD Board Mtg.* – **April 13** @ 7:00 pm – Clinton Fire Station
- **Stakeholders** Mtg. – **April 21** @ 3:00 pm – Come-On Inn, Missoula

+ All meetings open to general public
* Plan is first item on the agenda

Community Wildfire Protection Plans must be developed by local and state government representatives in consultation with federal agencies and other interested parties….

– Healthy Forests Restoration Act of 2003

Missoula County

FIRE PROTECTION ASSOCIATION

NEWS Release

For Immediate Release (January 27, 2005)

Contact: Glenda Wallace, Plan Coordinator 406.240.6718/722.5397
Jane Ellis, County Emergency Services Director 406.258.3448

Missoula County Developing Wildfire Protection Plan

Missoula (MT). – Missoula County is developing a Community Wildfire Protection Plan to increase its communities' chances of withstanding a severe wildfire, such as those experienced in western Montana in 2000 and 2003.

The Missoula County Office of Emergency Services is funding the project through a grant from the USDI Bureau of Land Management. Ravalli County and the Seeley-Swan area have already developed and adopted a similar plan, which is mandated by the National Fire Plan and the Healthy Forests Restoration Act of 2003. Flathead, Lake, Mineral, and Sanders counties are also developing these plans.

According to Emergency Services Director Jane Ellis, the goal of the Community Wildfire Protection Plan (CWPP) is to enhance public safety and to help prevent wildland fire losses. Primary objectives include community collaboration, prioritizing areas for hazard reduction and recommending ways to reduce hazardous fuels and the ignitability of homes. Adoption of CWPPs allows communities to compete for federal funding to implement hazardous fuels reduction projects, Ellis says.

The Missoula County Fire Protection Association (MCFPA) is spearheading the Missoula County project. MCFPA members include rural and municipal fire districts, the state of Montana, the USDA Forest Service, and various County offices.

Completion of Missoula County's wildfire protection plan is expected in June. For more information about this project, contact the CWPP Plan Coordinator Glenda Wallace at (406) 240-6718. To learn more about MCFPA or living with fire, visit www.mcfpa.org with its link to www.firewise.org.

Missoula County

FIRE PROTECTION ASSOCIATION

NEWS Release

For Immediate Release (March 7, 2005)

Contact: Glenda Wallace, Plan Coordinator 406.240.6718 / 722.5397
Jane Ellis, County Emergency Services Director 406.258.3448

Public Meetings Set for County Wildfire Protection Plan

Missoula (MT). – Seven public meetings have been scheduled for citizens interested in discussing development of a Community Wildfire Protection Plan for Missoula County.

Most will occur (see attached schedule) in the evening hours during fire district Board of Directors' meetings. Two will occur during the daytime: one to update county/city officials and the other for private land stewards, business owners, conservation and environmental groups. Each meeting will feature preliminary results from a countywide wildfire-risk assessment. All are open to the public. The first meeting is scheduled to occur in Frenchtown (March 14). Written comments will be accepted until May 1.

According to Missoula County Office of Emergency Services Director Jane Ellis, the Community Wildfire Protection Plan (mandated by the Healthy Forests Restoration Act of 2003) will help enhance public safety and prevent wildland fire losses. She says the public meetings will help project leaders identify protection areas and recommend ways to reduce hazardous fuels and the ignitability of homes. She explains that communities with approved plans can compete for federal funding to implement fuels reduction projects.

Ravalli County and the Seeley-Swan area have already developed a Community Wildfire Protection Plan. Flathead, Lake, Mineral, Sanders, Granite and Powell counties are developing them. The Missoula County plan is expected to be completed this spring.

The Missoula County Fire Protection Association (MCFPA) is spearheading the project, which is funded by a Bureau of Land Management grant. MCFPA members include the municipal fire department and rural fire districts, the state of Montana, the USDA Forest Service, and various Missoula County offices, including Emergency Services.

For more information about this project, contact the Plan Coordinator Glenda Wallace at (406) 240-6718. To learn more about MCFPA or living with fire, visit www.mcfpa.org with its link to www.firewise.org.

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CoF

For Immediate Release (August 2005)

DRAFT
7/28/05

Contact: Glenda Wallace, Plan Coordinator 406.240.6718 / 722.5397
Jane Ellis, County Emergency Services Director 406.258.3448

Missoula County Completes Community Wildfire Plan

Missoula (MT). – Officials of Missoula County have recently published a nationally mandated Community Wildfire Protection Plan (CWPP) that identifies more than 22,000 acres of land around Missoula County (excluding the Seeley/ Swan area) as needing **High Priority** attention to reduce the risk of catastrophic wildfire to nearby residents. The document identifies another 334,000 acres as having a Moderate Priority for Fuel Reduction work.

Director of the Missoula County Office of Emergency Services Jane Ellis says the assessment results—created using such data as vegetative fuel loads, slope, and population densities—produced no surprises.

"Early on in the development process," she says, "we surveyed our local fire chiefs about their known wildfire risks and, sure enough, their findings are reflected in our assessment results."

The Healthy Forests Restoration Act of 2003 asked communities to assume a greater role in identifying lands for priority fuel-reduction treatment and to recommend ways to do that and to reduce the ignitability of homes.

"This fire plan is a good starting point…a good strategy document…in terms of improving community safety from wildfire," says Ellis. "But the real work is still to come. Reducing the fuel loads in priority areas will demand new micro-level partnerships, between community members, agency representatives, business leaders and other stakeholders, in affected areas. And, as we can see from this fire season, that work can't be done soon enough."

Ellis explains that Missoula communities are eligible for priority, federal, fuel-reduction funding under the new Missoula County CWPP. She notes that the Seeley/Swan Fire Plan, created in 2004, covers the communities of Seeley Lake and Condon, and that their fire plan is now a companion document to the County CWPP. She points out that a mitigation plan for the Blackfoot/ Clearwater area is underway and that it, too, will provide fuel-reduction recommendations for that specific area.

Ellis further explains that all of the counties around Missoula County are in the process of developing or have developed community fire protection plans. Mineral County, currently experiencing the I-90 fires, released its plan earlier this year. Powell County is set to release its CWPP later this month.

- more -

The Missoula County Community Fire Protection Plan (CWPP) was developed by a diverse group of people, including many Missoula County Fire Protection Association (MCFPA) members. They utilized national guidelines and input from a series of public meetings held this past spring to do so. MCFPA members include a municipal fire department and rural fire districts, the state of Montana, the USDA Forest Service, and various Missoula County offices, including Emergency Services.

For more information about the Missoula County CWPP project, contact the County Office of Emergency Services (OES) or your local fire district. Copies of the Missoula County CWPP can be downloaded from the Missoula County website (Emergency Services homepage).

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Community Wildfire Protection Plan
Stakeholder Meeting Invitees
(April 21, 2005 – C'Mon Inn)

Tony Tacki, Safety Officer/Arvid Hiller, Mgr.
Mountain Water Company

Tara Comfort, Director
Missoula Conservation District

Bryon Bonnie. Community Forester
Bitter Root RC&D

Tony Harwood *Program Manager*
CSKT Fire Management

Robin L. Childers, Executive Director
Montana Nursery and Landscapers Association

Ellen Engstedt, Ex. VP
Montana Wood Products Association

Betty Kuropat, Pres.
Montana Native Plan Society

Harold McGaughey
Earth & Wood Craftsmen Inc.

Matt Arno, Pres.
Woodland Restoration. Inc.

Steve Hays, Forester
Plum Creek Timber

Dick Shimer, Env. Mgr.
Stimson Lumber Company

Rick Franke, Forester
Stone Forest Products

Angelo Veris, Forester
Tricon Timber

Bob Oldenberg, Mgr.
Pyramid Mountain Lumber

Bridgette Evans, Dir.
Missoula BIA Local # 2788

Anita Maxwell , Program Director
Montana Natural History Center

Michael Garrity, Ex. Director
Alliance for the Wild Rockies

Mathew Koehler, Dir.
Native Forest Network

Peter J. Dart President/Chief Ex Officer
The Rocky Mountain Elk Foundation

Adam Riessen/Bob Clark
Sierra Club – Bitterroot Mission Group

Anne Dahl, Ex. Dir.
Swan Ecosystem Center

Caryolyn Byrd, Director
The Nature Conservancy MT Field Office

Bob Conway, President
Five Valleys Audubon Society

Jake Kreilick, Ex. Director
National Forest Protection Alliance

Jeff Juel, Director
The Ecology Center, Inc.

Debbie Fasnacht, Ex. Dir.
Watershed Education Network

Bob Bruh, Chair
Ninemile Watershed Group

Mae Hassman, Executive Officer
Missoula County Association of REALTORS®, Inc.

Sheri Taylor, Montana ARC BOD President
American Red Cross Western Valleys District

Jim Mihan Chapter President
American Society of Landscape Architects
Idaho/Montana Chapter ASLA President

Marion Shore, Ex. Dir.
INDEPENDENT INSURANCE AGENTS OF MONTANA

Public Safety Director
Department of Transportation

Field Office Manager
BPA District Office

Dan Palmquist, Op. Manager
Montana Power Company

Robert Walker, Mgr.
Missoula Rural Electric Coop?

Pete Lawrenson, Safety Dir.
Montana Rail Link

Rich Clough, Field Manager
Fish, Wildlife & Parks

David Claman.
Missoula Parks & Recreation

Scott Stringer, Forester.
Missoula City

Missoula County
Community Wildfire Protection Plan
Stakeholders (Public) Meeting

April 21, 2005
C'mon Inn, Missoula
3 pm

Agenda

- CWPP Development – *Glenda Wallace*
- Risk Assessment Criteria/Results – *Sonja Reeves*
- Questions & Answers & General Discussion – *All*

Invited:
Mountain Water Company
Missoula Conservation District
Bitter Root Resource Conservation & Development
Montana Nursery and Landscapers Association
Montana Wood Products Association
Montana Native Plant Society
Montana Logging Association
Plum Creek Timber
Stimson Lumber Company
Tricon Timber
Pyramid Mountain Lumber
Missoula Building Industry Association
Montana Natural History Center
Alliance for the Wild Rockies
Native Forest Network
The Rocky Mountain Elk Foundation
Sierra Club
The Nature Conservancy – Montana Field Office
National Forest Protection Alliance
The Ecology Center
Watershed Education Network
Missoula County Association of Realtors
American Red Cross – Western Valleys District
American Society of Landscape Architects Idaho/Montana Chapter
Independent Insurance Agents of Montana.
Montana Power Company
Missoula Rural Electric Coop
Bonneville Power Administration
Montana Rail Link

Missoula County Community Wildfire Protection Plan
Stakeholders Public Meeting HANDOUT

April 21, 2005 – C'mon Inn, Missoula –3 pm

Project Purpose:

- To meet the mandate of the Healthy Forests Restoration Act (2003)
- To enhance the safety of Missoula County communities
- To reduce wildfire risks to humans, structures, and watersheds
- To bring priority funding status to communities for hazardous fuels reduction projects

Project Goals:

- Create a baseline map of communities, infrastructure, fire jurisdictions, values at risk, etc.
- Assess the county's wildfire risk (exception is Seeley Lake, which created a fire plan in 2004).
- Identify and prioritize the county's wildfire risk areas in terms of High, Moderate, or Low Risk.
- Gain community input on scope of wildland/urban interface, priority protection areas, and preferred treatment methods and fuel disposal.
- Help prepare communities for wildfire, i.e. reduce the ignitability of structures.

Community Wildfire Prevention Plan (CWPP)
Minimum Requirements

The CWPP must identify and prioritize areas for hazardous fuel reduction treatments and recommend the types and methods of treatment.

- Society of American Foresters Handbook on Preparing CWPPs

Wildfire Assessment Status:

- Assessment criteria identified.
- Data collection/mapping in progress.
- Contact Sonja Reeves at 626-5791 for results.

Project Deadlines:

- Public meetings completed by late April 2005.
- Follow-up/written comments preferred by May 10, 2005.
- Finished plan in June 2005.

Initial Project Team:

- Jane Ellis, Director, Missoula County Office of Disaster Emergency Services (Project Leader)
- Scott Waldron, Chief, Frenchtown Rural Fire District
- Bill Colwell, Deputy Chief, Missoula Rural Fire District
- Sonja Reeves, GIS Coordinator, Frenchtown RFD, Missoula County OES
- Glenda Wallace, Writer/Editor/Designer, Independent Contractor

Project Development Group:

- Paula Rosenthal, Montana Department of Natural Resources and Conservation
- Steve Holden, Montana Department of Natural Resources and Conservation
- Jamie Rosdahl, SW Land Office, MT Dept. of Natural Resources and Conservation
- Tom Carlsen, SW Land Office, MT Dept. of Natural Resources and Conservation
- Chuck Stanich, USDA Forest Service, Lolo National Forest
- John Waverek, Missoula Ranger District, Lolo Forest
- Laura Ward, Ninemile Ranger District, Lolo Forest
- Tim Love, Seeley Lake Ranger District, Lolo Forest
- Frank Maradeo, Seeley Lake Fire District
- Todd Scott and Jason Diehl, Missoula City Fire Dept.
- Shelly Witt, Confederated Salish & Kootenai Tribes
- Byron Bonnie, Bitter Root Resource Conservation & Development
- Jeff Cyr, Clinton Rural Volunteer Fire District
- George Hirschenberger, Bureau of Land Management

Community Wildfire Prevention Plan

A CWPP must recommend measures that homeowners and communities can take to reduce the ignitability of structures throughout the area addressed by the plan…..

Healthy Forests Restoration Act

For more information on the CWPP, contact Glenda Wallace at 406.722.5397 (gswrite@blackfoot.net)

Questions for the Public:

1) The national (default) definition of the wildland/urban interface is a mile and half from structures. Would you suggest any changes?

2) What types of hazardous fuel treatment methods would you suggest be used on federal ground? (*see Treatments Handout*)

3) What types of fuel disposal methods would you suggest for private ground?

4) What are your areas of geographic concern?

5) What do you think is the highest priority area within your fire district?

6) What, if any, regulatory approaches do you think the County should support in reducing the risk of wildfire to local communities?

Missoula County Fire Jurisdictions & Their Communities

Clinton Rural Fire District
- Clinton
- Lower Rock Creek +

East Missoula Rural Fire District
- East Missoula

Frenchtown Rural Fire District
- Evaro
- Frenchtown
- Huson/Ninemile
- Petty Creek
- The Wye

Greenough/Potomac Fee Protection Area
- Greenough
- Potomac

Missoula Rural Fire District
- Lolo
- Milltown/Bonner/Piltzville/Akerville
- Pine Grove/W. Riverside
- Southside of The Wye
- Turah

Missoula City Fire
- Missoula

Seeley Lake Rural Fire District*
- Seeley Lake

Swan Valley Fire Company*
- Condon

+ In process of joining Clinton District.
* See Seeley/Swan Fire Plan.

CWPP Benefits

The Healthy Forests Restoration Act (HRFA) is "landmark legislation [that] includes the first meaningful statutory incentives for the USFS and BLM to give consideration to the priorities of local communities as they develop and implement forest management and hazardous fuel reduction projects.

HFRA...gives priority to projects and treatment areas identified in a CWPP by directing federal agencies to give specific consideration to fuel reduction projects that implement those plans. If a federal agency proposes a fuel treatment project in an area addressed by a community plan but identifies a different treatment method, the agency must also evaluate the community's recommendation as part of the project's environmental assessment process."

From:
PREPARING A COMMUNITY WILDFIRE PROTECTION PLAN: A Handbook for Wildland-Urban Interface Communities

Sponsored By:
Communities Committee
Society of American Foresters
National Association of Counties
National Association of State Foresters
Western Governors' Association

Websites of Interest:
http://www.safnet.org/policyandpress/cwpp.cfm
http://www.healthyforests.gov/
http://www.bitterrootfireplan.org/

POSSIBLE FUEL-REDUCTION TREATMENTS

HANDOUT

The following are treatment methods for hazardous fuels reduction and the descriptions for federally managed lands within the wildland urban interface.

Slashing and Underburning

Trees less than six inches in diameter are felled with mechanized equipment, left on site to cure and the area is underburned. Access with existing roads is usually required.

Slashing and Pile Burning

Trees less than six inches in diameter are felled with mechanized equipment, piled on site by hand or with equipment and then the piles are burned. Access with existing roads is usually required.

Commercial Harvest with Ground Based Systems and Underburning

Trees of merchantable diameter would be harvested and whole tree yarded with ground based equipment or skyline systems and remaining activity fuels could be underburned. Access with existing roads is required, short temporary roads allowed.

Commercial Harvest with Ground Based Systems and Chipping

Trees of merchantable diameter would be harvested and yarded with ground based equipment or skyline systems, utilization specifications would have unmerchantable material yarded to landing and chipped. Access with existing roads is required, short temporary roads allowed.

Commercial Harvest with Ground Based Systems and Pile Burning

Trees of merchantable diameter would be harvested and yarded with ground based equipment or skyline systems and remaining activity fuels would be piled by hand or with mechanized equipment and burned. Access with existing roads is required, short temporary roads allowed.

Commercial Harvest with Ground Based Systems and No Fuels Treatment

Trees of merchantable diameter would be harvested and whole tree yarded with ground based equipment or skyline systems and remaining activity fuels would be left on site to decompose. Access with existing roads is required, short temporary roads allowed.

Thinning

Area would be (pre-commercially or commercially) thinned to spacing and species specifications to improve conditions for growth of remaining trees. Thinned trees would remain on the site to decompose. Access with existing roads is required. Access by hiking reasonable distances is adequate.

Thinning with Underburning

Area would be thinned to spacing and species specification to improve conditions for growth of remaining trees. Thinned trees would be left on site to drop needles then the stand would be underburned. The right tree species is required for underburning. Access with existing roads and access by hiking reasonable distances is adequate.

Prescribed Fire

Area would be treated with hand ignition or an aerial ignition method to reduce stand density, reduce ground fuels and reduce ladder fuels. Access can be limited.

Commercial Harvest with Helicopter Yarding and Underburning

Trees of merchantable diameter would be harvested and yarded with helicopters and remaining activity fuels would be underburned by hand or aerial ignition. Access can be limited. Helicopter landings need to be accessed by existing roads and within short turn around distances from harvest areas.

Commercial Harvest with Helicopter Yarding and Utilizations Specifications for Chipping at Landings:

Trees of merchantable diameter would be harvested and whole tree yarded with helicopters, included in the yarding would be smaller diameter trees for chipping at the landing site. Access can be limited. Helicopter landings need to be accessed by existing roads and within short turn around distances from harvest areas. These landings would need to be large to accommodate chipping operations. The market for chips would drive the feasibility of this option.

Commercial harvest with Helicopter Yarding and No Fuels Treatment:

Trees of merchantable diameter would be harvested and whole tree yarded with helicopters. The activity fuels generated would be left on site to decompose. Access can be limited. Helicopter landings need to be accessed by existing roads and within short turn around distances from harvest areas.

Missoula County CWPP
Public Meeting Sign-In Sheets

Missoula County Community Wildfire Protection Plan
Frenchtown Community Meeting
Monday March 14, 2005

	Name	Address	Telephone #
1.	Steve Roy	8845 Ingreland Rd.	Omitted for Privacy Reasons
2.	Scott Waldron	18895 Nine Mile Rd	
3.	Dan Pattee	17780 Hodgson Ln	
4.	Tom Mahlum	10955 Hwy 93 N.	
5.	Sandra Tocci	PO Box 1 Alberton	
6.	Mike Bose	P.O. Box 147 Frenchtown	
7.	Kylee Seitz	610 Montana Ave Msla	
8.	Marty R Meeks	8902 Western Farms Rd Mlsla	
9.	Adriane Miller	Box 460209 Huson MT	
10.	Cindy Crittenden	90 Plateau Rd.	
11.	Dennis Davis	19025 Arabian Ln	
12.	Troy Monroe	6005 W. Petty Creek	
13.	John Q Murray	76978 River Run	
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Missoula County Community Wildfire Protection Plan
Missoula County/City Presentation
Thursday March 31, 2005

Name	Address	Telephone #
1. Tom Steenberg	625 E Pine, Msla 59802	Omitted for Privacy Reasons
2. Jason Diehl	"	
3. Tom Ellis	Msla Co 200 W Broadway	
4. Nancy Heil	Office of Planning & Grants Msla	
5. Tom Carlsen	MSO Unit, DNRC	
6. David Clawson	City Parks	
7. Jean CURTISS	County Commissioner	
8. TERINA MULLEN	BLM	
9. Jamie Rosdahl	DNRC - SOLO	
10. Heidi Kendall	City Council - 435 Ryman	
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Missoula County Community Wildfire Protection Plan
Greenough/Potomac Presentation
Tuesday April 5, 2005

Name	Address	Telephone #
1. Tom Carlsen	Missoula Unit - DNRC	Omitted here for Privacy Reasons
2. Bud Pile	Potomac	
3. Frank Manns	Greenough/Potomac	
4. Heath Hanson	Greenough-Potomac VFD	
5. Lee Hyslop	Potomac MT	
6. Matthew Knox	Greenough	
7. Brad Hall	Potomac	
8. Shane Warehime	Potomac	
9. Doug Hall	GPVFD	
10. Pete Van Loben Sels	Potomac	
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Missoula County Community Wildfire Protection Plan
Missoula City Fire Presentation
Monday April 11, 2005

Name	Address	Telephone #
1. Tom Carlsen	MSO Unit - DNRC	Omitted here for Privacy Reasons
2. Jason Diehl	Msla City Fire	
3. TODD SCOTT	MSLA. CITY FIRE	
4. Chad Nicholson	MSLA City Fire	
5. Bill Colwell		
6. Jane Ellis		
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Missoula County Community Wildfire Protection Plan (CWPP)
Missoula Rural Fire District Board
Tuesday, April 12, 2005

	NAME	ADDRESS	Tel. #
1.	Hugh A. Jesse	5857 Kraft, Missoula	Omitted for Privacy Reasons
2.	Don Corti	11295 O'Brien Creek Rd	
3.	LARRY HANSON	Box 1712 LoLo	
4.	Cheryl Hanson	Box 1712 LoLo	
5.	Bill Lindstrom	2521 S. Ave. W, Missoula	
6.	Tina Phillips	2521 S. Ave W. Msla	
7.	Dale Golden	2521 S. Ave. W.	
8.	CURT BELTS	" " "	
9.	TAD Kolwicz	DNRC-SWLO 1401 27th Ave Msla	
10.	Bob Reid	4 September Drive, Msla.	
11.	Tom Carlsen	MSO Unit - DNRC	
12.	RICHARD BRISKIN	6230 GRANT CREEK	
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Missoula County Community Wildfire Protection Plan
Clinton Rural Fire Presentation
Wednesday April 13, 2005

Name	Address	Telephone #
1. Rick Hagen	Box 134 Clinton MT	Omitted for Privacy Reasons
2. Bob Sears	22155 Wallace Ck Rd, Clint	
3. Emmitt Tucker	19850 Hwy 10 E Clinton MT	
4. Larry McGraw	25274 Bonita Ranger Sta. Rd	
5. Dan Tucker	19950 Hwy 10 E Clinton	
6. Bryce Rieger	Box 133 Clinton	
7. Tom Carlsen	MSO Unit DNRC	
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Missoula County Community Wildfire Protection Plan
Stakeholders Presentation
Thursday April 21, 2005

	Name	Address	Telephone #
1.	JIM LOWERY	1505 ASPEN DRIVE	
2.	JOHN WAVEREK	Bldg 24A, Fort Missoula	
3.	Chuck Seeley	P.O. Box 929 Frenchtown, 59834	
4.	[illegible]	3174 Hwy 93S Stev.	
5.	Paul Lachapelle	1505 Pattee Canyon Miss	
6.	Charlie Vandam	1120 Cedar	
7.	Sheri Taylor	1500 W. Broadway Suit E 5980	
8.	Bob Clark, Sierra Club	PO Box 9283 Msla. 59807	
9.	Jason Diehl	625 E. Pine (Msla. Fire)	
10.	Craig Thomas	4188 Kinkaid Ave Stev	
11.	TAD KOLWICZ	2705 Spurgin Rd Msla	
12.	Jake Kreilick	1200 Bench Rd. Msla MT 59808	
13.	Shelagh Fox	3255 Ft Missoula Rd Msla MT 59804	
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Omitted here for Privacy Reasons

People who attended by didn't sign in:

- Harold McGaughey, Earth & Wood
-

Missoula County CWPP

NOTES From PUBLIC OUTREACH MEETINGS

As captured by Plan Coordinator

March 14, 2005 – Frenchtown Rural Fire District Board of Directors/Public Meeting

There is community support for fuel mitigation. Where possible, we're asked to create fuel treatment projects that generate a profit, i.e. local byproducts go to local markets.

Email Response after Meeting: "Because of its proximity to two local mills, it is economically viable to transport wood products from fuel treatments performed in the Frenchtown district WUI. The USFS should consult with the Smurfit-Stone or Tricon mills when designing fuel treatment projects in this district. Rather than fire or burning, these projects should wherever possible produce wood products (trees and/or chips) that can benefit these mills" - John Q. Murray

March 31, 2005 – Missoula City/County Officials/Public Meeting

The Office of Planning & Grants (OPG) would like to identify areas for future development, i.e. Plum Creek Timberlands. OPG is also interested in helping define WUI boundaries and knowing if there are areas where the County shouldn't be approving more development. One city council representative wants to know what to tell her constituents about "what to do" if a fire comes too close. A county commissioner asked about adopting tougher subdivision laws or development fees similar to those used in the Frenchtown Rural Fire District. Attendees also discussed "conditions for approval" for areas outside jurisdictional boundaries that want to join existing fire protection districts.

April 5, 2005 –Greenough/Potomac Fire District Board of Directors/Public Meeting

Board members want the County's help in "ground truthing of data." They also want County help in motivating local homeowners toward more fire preparedness via fuel-reduction projects. They indicate public confusion about project funding. The contractor/writer of the Seeley/Swan plan was at the Greenough/Potomac meeting to explain work underway on a new local project: the Blackfoot Fuels Corridor Analysis and Fire Plan). He told the group that the task force allows "one stop shopping," which can limit public confusion. Board members expressed interest in the community forester position created via the Seeley/Swan Fire Plan and the Bitter Root Resource Conservation District. The District has had limited success fielding local mitigation crews, primarily due to a lack of local interest.

April 11, 2005 – Missoula City Fire Department Public Meeting

The attendees wanted to know how to get commercial work done, meaning funding opportunities. They also discussed Open Space management, wildlife, and the after-effects of fire. They mentioned the increased building in the South Hills and the effect of slope on wildfire. They discussed the option of chipping to dispose of biomass.

April 12, 2005 – Missoula Rural Fire District Board of Directors/Public Meeting

Board members were concerned about growth in the wildland/urban interface and how volunteer districts with limited daylight response affect nearby paid districts. They discussed ways to keep the District's fuel-reduction crews working through grant- funded opportunities. They discussed current mitigation work underway in Hays Creek and

Pattee Canyon and biomass disposal options, i.e. the use/purchase of chippers. They discussed the need for ongoing education ("ways to get information to the public").

April 13, 2005 –Clinton Rural Fire District Board of Directors/Public Meeting

Board members were interested in funding opportunities for fuel-reduction work, and methods for creating a work crew utilizing volunteer firefighters. Specifically, they were concerned about limits on paying volunteer staff. The DNRC clarified that fuel-reduction work was different from a firefighting assignment, and therefore would not cause a problem with current policies. They suggested this crew could help identify grant opportunities as well as execute on the ground change. They requested being "kept in the loop" of County fuel-reduction project funding opportunities and new mitigation projects.

April 21, 2005 – Missoula County Stakeholders/Public Meeting

There was considerable discussion about the definition of the wildland/urban interface. Some attendees thought the 1.5 mile from structures was "too simplistic." They recommend 400 meters, which allows for more focused ground truthing (i.e., "150 feet from the home to the ridgetop") and concentrated/more effective investment/treatment. Attendees discussed the fact that "we don't have to treat every acre…break the fuel in central places…to get a lot of return on investment." The group also discussed targeted homes in ponderosa pine sites with egress problems.

They recommend that treatments be "disciplined." A diameter limit for tree cutting was suggested ("nothing bigger than 5 feet"). They mentioned leaving legacy trees and concentrating work on lower hillsides, on slopes and canyons where fire could be funneled to structures.

Under treatment during the biomass disposal stage was also suggested. Chipping and leaving the biomass on site was offered as an option ("it could work in wetter areas"), but the consensus was that leaving chips onsite could contribute to a surface burn leading to structures. A suggestion was made for "a common sort yard" for unwanted vegetation from fuel-reduction projects. The Fuels for Schools program was also mentioned.

Regulation on building in high fire areas, similar to flood plain policies, was mentioned.

Attendees discussed the need for someone "to chase lots of grant dollars…who could collectively go after funding for MCFPA members."

Email Response after Meeting: In terms of the criteria used in the Assessment, the only one that we take issue with is the insect and disease mortality (both of which are a natural part of forest succession) and would have used that 10% to give more weight to the human factors: population density and egress areas. This would enable the county to better identify the priority areas for fuel reduction treatments.

As far as the questions posed at last week's public meeting, here are NFPA's specific comments.

1. NFPA advocates using a 400 meter Community Protection Zone (CPZ) to establish a practical boundary for treatments in the wildlands-urban interface. We believe that using a mile and a half from structures is not grounded in fire science (i.e. is not effective in protecting homes and communities from wildfires), and will waste precious federal dollars. Once we have done all the work in the CPZ, then we can talk about treatments outside of the 400 meter zone but the reality is that we will have to be back in treating previously thinned areas in the CPZ on a regular basis (5 to 7 years).

2. NFPA would like to see as many of the treatment methods as possible avoid using heavy equipment, particularly tracked vehicles, to ensure that soils are protected and erosion doesn't occur. Ideally, we'd like to see local

contractors hiring local people to do the thinning, brush removal and burning. We don't want these fuel reduction activities to result in further degradation to already stressed, out of whack forest ecosystems caused by a century of fire suppression and commercial logging and road building.

For the most part, we also believe that these treatments are largely non-commercial meaning that, while some commercial by-products may be produced, these treatments should not be offered as timber sales. Some materials certainly could be sold but these treatments are not about board feet and should emphasize the quality of the job. Again, ecology will take a back seat during these treatments inside the CPZ but it's still important to leave some stand structure and to be cognizant of aesthetic values.

3. Primarily, hand piling and burning and chipping and removing off site.

4. I think the CWPP should focus a lot of geographic attention on high-density [vegetation] clusters in the WUI and egress areas with moderate to high population densities.

5. Grant Creek and Butler Creek [are areas of geographic concern].

6.Both landowners who are developing private property and real estate developers need to bear a certain level of the responsibility for home and community wildfire preparedness. NFPA would support county government efforts to enact defensible space codes and to provide certain incentives to landowners and developers who agree to incorporate this into their property development. Obviously, the insurance industry can have some influence on this as well but the county needs to create some regulations so other taxpayers aren't left holding the bag.

This is also where joint educational efforts could go a long ways to facilitating greater awareness and participation in fuel reduction efforts in the county. We talked about helping to organize more community meetings/forums, field trips, Parade of fire-safe homes, etc. at the meeting and NFPA would be willing to help the Project Team organize such events.

- Jake Kreilick, National Forest Protection Association (NFPA)

DEFINING OUR TERMS

Excerpted/modified from the Firewise Glossary on the Firewise website

Arson Fire A wildfire willfully ignited by anyone to burn, or spread to, vegetation or property without consent of the owner or his/her agent.
Burning conditions The state of combined, environmental factors that affect fire behavior in a specified fuel type.
Canopy The stratum containing the crowns of the tallest vegetation present (living or dead), usually above 20 feet.
Closure Legal restriction, but not necessarily elimination, of specified activities such as smoking, camping or entry that might cause fires in a given area.
Catastrophic Fire A raging, destructive fire. Often used to describe a fire burning under extreme fire weather. The term is also used when a wildland fire burns into a wildland/urban interface, destroying many structures.
Crown fire A fire that advances from top to top of trees or shrubs more or less independent of a surface fire.
Debris burn (also called a debris burning fire) In fire suppression, a fire spreading from any fire originally ignited to clear land or burn rubbish, garbage, crop stubble, or meadows (excluding incendiary fires).
Defensible space An area, typically a width of 30 feet or more, between an improved property and a potential wildfire where the combustibles have been removed or modified.
Escape Route Route away from dangerous areas on a fire; should be preplanned.
Evacuation The temporary movement of people and their possessions from locations threatened by wildfire.
Exposure (1) Property that may be endangered by a fire burning in another structure or by a wildfire.(2) Direction in which a slope faces, usually with respect to cardinal directions.
(3) The general surroundings of a site with special reference to its openness to winds.
Extreme fire behavior A level of fire behavior characteristics that ordinarily precludes methods of direct control. One or more of the following is usually involved: high rates of speed, prolific crowning and/or spotting, presence of fire whirls, a strong convection column. Predictability is difficult because such fires often exercise some degree of influence on their environments and behave erratically, sometimes dangerously.
Fine Fuels Fast-drying dead fuels, generally characterized by a comparatively high surface area-to volume ratio, which are less than 1/4-inch in diameter. These fuels (grass, leaves, needles, etc.) ignite readily and are consumed rapidly by fire when dry.
Fire behavior The manner in which a fire reacts to the influences of fuel, weather, and topography.
Fire department Any regularly organized fire department, fire protection district or fire company regularly charged with the responsibility of providing fire protection to the jurisdiction.
Fire front That part of a fire within which continuous flaming combustion is taking place. Unless otherwise specified it is assumed to be the leading edge of the fire perimeter.
Fire hazard A fuel complex, defined by volume, type condition, arrangement, and location, that determines the degree of ease of ignition and of resistance to control.
Fire prevention Activities, including education, engineering, enforcement and administration, that are directed at reducing the number of wildfires, the costs of suppression, and fire-caused damage to resources and property.
Fire protection The actions taken to limit the adverse environmental, social, political and economical effects of fire.
Fire regime Periodicity and pattern of naturally occurring fires in a particular area or vegetative type, described in terms of frequency, biological severity, and area extent. For example, frequent, low-intensity surface fires with one to 25-year return intervals occur in the southern pine forests of the Southeastern United States, the sawgrass everglades of Florida, the mixed conifer forests of the western Sierras of California, and so forth.
Fire-resistant roofing The classification of roofing assemblies A, B or C as defined in the Uniform Building Code (UPC) Standard 32.7.
Fire-resistant tree A species with compact, resin-free, thick corky bark and less flammable foliage that has a relatively lower probability of being killed or scarred by a fire than a fire sensitive tree.
Fire season (1) Period(s) of the year during which wildland fires are likely to occur, spread, and affect resources values sufficient to warrant organized fire management activities.
(2) A legally enacted time during which burning activities are regulated by State or local authority.

Firestorm Violent convection caused by a large continuous area of intense fire. Often characterized by destructively violent surface indrafts, near and beyond the perimeter, and sometimes by tornado-like whirls.
Fire triangle Instructional aid in which the sides of a triangle are used to represent the three factors (oxygen, heat, fuel) necessary for combustion and flame production; removal of any of the three factors causes flame production to cease.
Fire weather Weather conditions which influence fire starts, fire behavior or fire suppression.
Firebrand; Burning Ember Any source of heat, natural or human made, capable of igniting wildland fuels. Flaming or glowing fuel particles that can be carried naturally by wind, convection currents, or by gravity into unburned fuels. Examples include leaves, pinecones, glowing charcoal, and sparks.
Firebreak A natural or constructed barrier used to stop or check fires that may occur, or to provide a control line from which to work.
Firefighter A person who is trained and proficient in the components of structural or wildland fire.
Firewise construction The use of materials and systems in the design and construction of a building or structure to safeguard against the spread of fire within a building or structure and the spread of fire to or from buildings or structures to the wildland/urban interface area.
Firewise landscaping Vegetative management that removes flammable fuels from around a structure to reduce exposure to radiant heat. The flammable fuels may be replaced with green lawn, gardens, certain individually spaced green, ornamental shrubs, individually spaced and pruned trees, decorative stone or other non-flammable or flame-resistant materials.
Flame A mass of gas undergoing rapid combustion, generally accompanied by evolution of sensible heat and incandescence.
Flammability The relative ease with which fuels ignite and burn regardless of the quantity of the fuels.
Fuel condition Relative flammability of fuel as determined by fuel type and environmental conditions.
Fuel load The volume of fuel in a given area generally expressed in tons per acre.
Fuel modification; mitigation, reduction Any manipulation or removal of fuels to reduce the likelihood of ignition or the resistance to fire control.
Fuels All combustible material within the wildland/urban interface or intermix, including vegetation and structures.
Fuelbreak An area, strategically located for fighting anticipated fires, where the native vegetation has been permanently modified or replaced so that fires burning into it can be more easily controlled. Fuel breaks divide fire-prone areas into smaller areas for easier fire control and to provide access for firefighting.
Greenbelt A fuel break designated for use other than fire protection.
Ground fuels All combustible materials such as grass, duff, loose surface litter, tree or shrub roots, rotting wood, leaves, peat or sawdust that typically support combustion.
Hazard The degree of flammability of the fuels once a fire starts. This includes the fuel (type, arrangement, volume and condition), topography and weather.
Hazardous areas Those wildland areas where the combination of vegetation, topography, weather, and the threat of fire to life and property create difficult and dangerous problems.
Hazard reduction Any treatment of living and dead fuels that reduces the threat of ignition and spread of fire. (see modification, mitigation; maybe use this there?)
Human-caused fire Any fire caused directly or indirectly by person(s).
Initial attack The actions taken by the first resources to arrive at a wildfire to protect lives and property, and prevent further extension of the fire.
Ladder fuels Fuels that provide vertical continuity allowing fire to carry from surface fuels into the crowns of trees or shrubs with relative ease.
Mitigation Action that moderates the severity of a fire hazard or risk.
Natural barrier Any area where lack of flammable material obstructs the spread of wildfires.
Overstory That portion of the trees in a forest that forms the upper or uppermost layer.
Preparedness (1) Condition or degree of being ready to cope with a potential fire situation.
Prescribed fire (also called prescribed burning) Controlled application of fire to wildland fuels in either their natural or modified state, under specified environmental conditions, which allows the fire to be confined to a

predetermined area, and to produce the fire behavior and fire characteristics required to attain planned fire treatment and resource management objectives.

Property protection To protect structures from damage by fire, whether the fire is inside the structure or is threatening from an exterior source. The municipal firefighter is trained and equipped for this mission and not usually trained and equipped to suppress wildland fires. Wildland fire protection agencies are not normally trained nor charged with the responsibility to provide structural fire protection but will act within their training and capabilities to safety prevent a wildland fire from igniting structures.

Protection area That area for which a particular fire protection organization has the primary responsibility for attacking an uncontrolled fire and for directing the suppression action. Such responsibility may develop through law, contract, or personal interest of the fire protection agent. Several agencies or entities may have some basic responsibilities without being known as the fire organization having direct protection responsibility.

Response Movement of an individual firefighting resource from its assigned standby location to another location or to an incident in reaction to dispatch orders or to a reported alarm.

Risk The chance of a fire starting from any cause.

Rural fire district (RFD) An organization established to provide fire protection to a designated geographic area outside of areas under municipal fire protection. Usually has some taxing authority and officials may be appointed or elected.

Rural fire protection Fire protection and firefighting problems that are outside of areas under municipal fire prevention and building regulations and that are usually remote from public water supplies (can we lump into above?).

Slope The variation of terrain from the horizontal; the number of feet rise or fall per 100 feet measured horizontally, expressed as a percentage.

Structure fire Fire originating in and burning any part of all of any building, shelter, or other structure.

Structural fire protection The protection of a structure from interior and exterior fire ignition sources. This fire protection service is normally provided by municipal fire departments, with trained and equipped personnel. After life safety, the agency's priority is to keep the fire from leaving the structure of origin and to protect the structure from an advancing wildland fire. (The equipment and training required to conduct structural fire protection is not normally provided to the wildland firefighter.) Various taxing authorities fund this service.

Suppression The most aggressive fire protection strategy, it leads to the total extinguishment of a fire.

Surface fuel Fuels lying on or near the surface of the ground, consisting of leaf and needle litter, dead branch material, downed logs, bark, tree cones, and low stature living plants.

Uncontrolled fire Any fire which threatens to destroy life, property, or natural resources, and (a) is not burning within the confines of firebreaks, or (b) is burning with such intensity that it could not be readily extinguished with ordinary, commonly available tools.

Understory Low-growing vegetation (herbaceous, brush or reproduction) growing under a stand of trees. Also, that portion of trees in a forest stand below the overstory.

Volunteer fire department (VFD) A fire department of which some or all members are unpaid.

Volunteer firefighter Legally enrolled firefighter under the fire department organization laws who devotes time and energy to community fire service without compensation other than Worker's Compensation or other similar death and injury benefits.

Wildfire An unplanned and uncontrolled fire spreading through vegetative fuels, at times involving structures.

Wildland An area in which development is essentially non-existent, except for roads, railroads, power lines, and similar transportation facilities. Structures, if any, are widely scattered.

Wildland fire Any fire occurring on the wildlands, regardless of ignition source, damages or benefits.

Wildland fire protection The protection of natural resources and watersheds from damage by wildland fires. State and Federal forestry or land management agencies normally provide wildland fire protection with trained and equipped personnel. (The equipment and training required to conduct wildland fire protection is not normally provided to the structural fire protection firefighter.) Various taxing authorities and fees fund this service.

Wildland/Urban Interface (also called **Urban interface)** Any area where wildland fuels threaten to ignite combustible homes and structures.

Suggested Readings

Missoula County Plans:

- *Missoula County Pre Disaster Plan (2004)*
- *Missoula County Interface Fire Plan (1998)*
- *Project Analysis of the Foothills Wildland/Urban Interface & portions of Frenchtown Face EIS (1998)*
- *A Framework for Collaboration in the Wildland/Urban Interface of the Missoula and Bitterroot Valleys*

Other Community Fire Plans:

- *Seeley/Swan Fire Plan (2003)*
- *Bitterroot (MT) Community Wildfire Protection Plan (2004)*
- *Mineral County Community Wildfire Protection Plan (2005)*
- *Lake County Community Wildfire Protection Plan (2005)*
- *Flathead County Community Wildfire Protection Plan (2005 pending)*
- *Granite County Community Wildfire Protection Plan (2005 pending)*
- *Powell County Community Wildfire Protection Plan (2005 pending)*
- *Sanders County Community Wildfire Protection Plan (2005 pending)*
- *Mineral County Interface Fire Plan (1998)*
- *Ravalli County Interface Fire Plan (1999)*

National Documents on Community Fire Protection Planning:

- *The National Fire Plan (2000)*
- *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-Year Comprehensive Strategy (2001)*
- *A Collaborative Approach for Reducing Wildland Fire Risks to Communities and the Environment 10-year Comprehensive Strategy – Implementation Plan (2002)*
- *The Healthy Forests Restoration Act of 2003*
- *Preparing a Community Wildfire Protection Plan: A Handbook for Wildland/Urban Interface Communities (2004)*

Pertinent Federal Plans:

- *Lolo National Forest Plan*
- *Lolo National Forest Fire Management, Aviation and Air Quality Plan*
- *Bureau of Land Management Resource Management Plan*

Pertinent State Plans:

- *State of Montana DNRC Fire & Aviation Program Strategic Action Plan (2003)*
- *Montana Wildland/Urban Interface Guidelines (pending 2005)*

Other Community Protection-Related Documents:

- *The Rattlesnake and Grant Creek (MT) Fuel Mitigation Projects Report (2004)*
- *Native Forest Network documents pertaining to wildfire/fuel reduction*

Other Good Reading:

- *Preventing Wildland-Urban Fire Disasters, Jack D. Cohen, USDA Forest Service, Gen. Tech. Rpt. (CD-ROM)*
- *Tending Fire: Coping with America's Wildland Fires, Stephen J. Pyne; Island Press 2004*
- *Mimicking Nature's Fire, Steve Arno and Carl E. Fiedler, Island Press 2005*

- *Flames in Our Forests: Disaster or Renewal; Stephen F. Arno and Steven Allison-Bunnell, Island Press (2002)*
- *Year of the Fires; The Story of the Great Fires of 1910; Stephen J. Pyne, Penguin Books 2001*
- *World Fire: The Culture of Fire On Earth; Stephen J. Pyne, Henry Holt & Company 1995*
- *Fire Ecology of Western Montana Forest Habitat Types; William C. Fischer and Anne F. Bradley (1987)*

Good Websites

Local Links

- *Missoula County Office of Emergency Services www.missoula.co.mt.us/des/*
- *Missoula County Fire Protection Association www.mcfpa.org*
- *Lolo National Forest www.fs.fed.us/r1/lolo/*
- *Montana Department of Natural Resources and Conservation www.dnrc.state.mt.us*
- *Missoula Fire Department www.ci.missoula.mt.us/fire/*
- *Missoula Rural Fire District www.mrfdfire.org/*
- *Frenchtown Rural Fire Districtwww.frenchtownfire.org*
- *Seeley Lake Rural Fire District www.seeleyfire.org*
- *Bitter Root Resource Conservation and Development Council www.bitterrootrcd.org*
- *Confederated Salish & Kootenai Tribes www.cskt.org*

National and State Links

- *The National Fire Plan www.fireplan.gov*
- *Federal Agency Implementation Guidance for Healthy Forests Initiative and the Healthy Forests Restoration Act www.fs.fed.us/projects/hfi/field-guide/*
- *Field Guidance for Identifying and Prioritizing Communities At Risk: www.stateforesters.org/reports/COMMUNITIESATRISKFG.pdf*
- *Western Governors Association www.westgov.org*
- *Society of American Foresters (CWPP Handbook) www.safnet.org/policyandpress/cwpp.cfm*
- *National Firewise Communities Program www.firewise.org*
- *Fire Safe Councils: www.firesafecouncil.org*
- *National Interagency Fire Center www.nifc.gov*
- *National Weather Service www.wrh.noaa.gov*
- *National Fire Protection Association www.nfpa.org*
- *International Code Council www.iccsafe.org*
- *National Database of State and Local Wildfire Hazard Mitigation Programs www.wildfireprograms.com*
- *Montana Natural Resource Information System www.nris.state.mt.us.com*